

# ***I-270/US 15 Multi-Modal Corridor Study***

*Frederick and Montgomery Counties, Maryland*



## **Alternatives Analysis/Environmental Assessment**

*May 2009*

US Department of Transportation  
Federal Highway Administration  
Federal Transit Administration

Maryland Department of Transportation  
State Highway Administration  
Maryland Transit Administration





# I-270/US 15 Multi-Modal Corridor Study

## Administrative Action

## Environmental Assessment/Alternatives Analysis

Submitted pursuant to Section 102(2)(c), PL 91-190 of the National Environmental Policy Act of 1969: 42 USC 4332(2); 49 USC Section 303 (formerly Section 4(f) of the Department of Transportation Act of 1966); 49 USC Sections 5301(e), 5309(e)(2)-(7), 5323(b) and 5324(b) (formerly Sections 3(d), 3(i) and 14 of the Federal Transit Act, as amended; CEQ Regulations (40 CFR 1500 (et seq.)); National Historic Preservation Act of 1966, Section 106 (16 USC Section 470f); Executive Order 11990 (Protection of Wetlands); Executive Order 11988 (Floodplain Management); and Executive Order 12898 (Environmental Justice).

### Prepared by:

Maryland Department of Transportation  
State Highway Administration  
Maryland Transit Administration

US Department of Transportation  
Federal Highway Administration  
Federal Transit Administration

### Cooperating Agencies


US Environmental Protection Agency

US Army Corps of Engineers

Date:

5/26/09

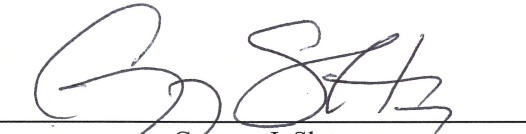
For FHWA:

  
Nelson Castellanos  
DelMar Division, Division Administrator,  
Baltimore Office

Date:

5/22/09

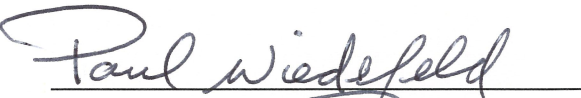
For SHA:

  
Gregory I. Slater  
Director, Office of  
Planning and Preliminary Engineering

Date:

5/26/09

For MTA:

  
Paul Wiedefeld  
Administrator

The purpose of the I-270/US 15 Multi-Modal Corridor Study is to investigate options to relieve congestion and improve safety conditions along the I-270/US 15 Corridor. The I-270/US 15 Corridor is approximately 31 miles long and extends from the Shady Grove Metro Station (south of I-370) in Montgomery County, Maryland, to the US 15/Biggs Ford Road intersection, north of the City of Frederick in Frederick County, Maryland. Alternatives under consideration include the No-Build Alternative, the Transportation Systems Management/Transit Demand Management Alternative, and Alternatives 3A/B, 4A/B, 5A/B/C, 6A/B and 7A/B, which consist of several combinations of highway and transit strategies including general-purpose lanes, auxiliary lanes, High Occupancy Vehicle (HOV) lanes, Express Toll Lanes (ETLs), collector-distributor (CD) lanes, light rail transit (LRT) on the Corridor Cities Transitway (CCT), bus rapid transit (BRT) on the CCT, Premium Bus, and others. This document describes and summarizes the potential transportation and environmental impacts, costs, and a comparative evaluation of the multi-modal transportation Alternatives 6A/B and 7A/B, which propose ETLs and general-purpose lanes with either LRT or BRT on the CCT (refer to **Table S-2** in the Summary Chapter for a summary of impacts). This document is provided as a companion to the 2002 Draft Environmental Impact Statement (DEIS), which provided an evaluation of Alternatives 3A/B, 4A/B and 5A/B/C (refer to **Table S-2**).

For further information, contact:

### Mr. Bruce M. Grey

Deputy Director  
Office of Planning and Preliminary Engineering  
State Highway Administration  
707 N. Calvert Street, Mail Stop C-301  
Baltimore, MD 21202  
Hours: 7:30 a.m. to 4:30 p.m., Mon-Fri.  
(410) 545-8500

### Ms. Diane Ratcliff

Director  
Office of Planning and Capital Programming  
Maryland Transit Administration  
6 Saint Paul Street  
Baltimore, MD 21202  
Hours: 8:00 a.m. to 4:00 p.m., Mon-Fri.  
(410) 767-3771

### Ms. Stephanie Pratt

Area Engineer  
Federal Highway Administration  
DelMar Division  
10 South Howard Street, Suite 2450  
Baltimore, MD 21201  
Hours: 8:00 a.m. to 4:00 p.m., Mon-Fri.  
(410) 779-7160

### Ms. Gail McFadden-Roberts

Community Planner, Region III  
Federal Transit Administration  
1760 Market Street, Suite 500  
Philadelphia, PA 19103  
Hours: 8:00 a.m. to 4:00 p.m., Mon-Fri.  
(215) 656-7100

Information on the date, time, and location of the public hearing will be published in local and regional newspapers. Comments on this document are due within 60 days, or by July 31, 2009, and may be submitted in writing to the above addresses or made orally or in writing at the public hearings.





# Introduction

## Purpose of This Study

The I-270/US 15 Multi-Modal Corridor Study is a joint project planning study undertaken by the Maryland State Highway Administration (SHA) and the Maryland Transit Administration (MTA). The study area includes 31 miles of proposed highway improvements along the I-270 and US 15 corridor between I-370 in Montgomery County and Biggs Ford Road in Frederick County, and the 14-mile Corridor Cities Transitway (CCT), a proposed rapid transit corridor within Montgomery County that extends from the Shady Grove Metrorail station in Rockville to the COMSAT facility just south of Clarksburg. The transitway would provide direct connections to the Metrorail Red Line at Shady Grove and the MARC Brunswick Line at Metropolitan Grove. The CCT will directly serve a number of major activity centers and growth centers in the corridor. Feeder bus service to station areas will be provided by local transit operators.

The objective of this planning study is to provide the public and decision-makers with appropriate and relevant information needed to make an informed decision on a preferred mix of highway and transit investments as defined by the various alternatives under study. The National Environmental Policy Act of 1969 (NEPA) requires consideration of the impacts to the natural and built environment of any federally funded transportation investment. NEPA requires a systematic interdisciplinary analysis of the costs and benefits of a proposed action, including the following:

- The probable environmental impacts of the action, including impacts to the natural and built environment
- The effects of the proposed action on the transportation system
- The measures taken to avoid potential impacts
- Strategies for minimizing or mitigating unavoidable impacts, as appropriate

In addition, consultation with federal, state, and local agencies and public participation in the planning process are required.

The alternatives under consideration include the No-Build Alternative (Alternative 1), the Transportation Systems Management/Transportation Demand Management (TSM/TDM) Alternative (Alternative 2), and five roadway build alternatives that consider the addition of highway lane

capacity in the form of general purpose lanes or managed lanes as either high-occupancy vehicle (HOV) lanes or express toll lanes (ETLs). Each of the roadway build alternatives is combined with either bus rapid transit (BRT) technology or light rail transit (LRT) technology on the CCT. In addition, a Premium Bus transit alternative is joined with one of the roadway build alternatives. The build alternatives are designated by a number and letter where the number

### HIGHWAY LANE DESCRIPTIONS

- **General Purpose** (GP) lanes are regular traffic lanes designed to accommodate all motor vehicle traffic on interstate and state highways, generally posted at speeds of 55 miles per hour or higher.
- **High-Occupancy Vehicle** (HOV) lanes are dedicated lanes which can only be used by vehicles with two or more occupants or by motorcycles. HOV lanes are managed lanes designed to encourage car-pooling.
- **Express Toll Lanes**<sup>SM</sup> (ETLs<sup>SM</sup>) are another type of managed lanes designed to alleviate congestion in the general purpose lanes and provide relatively free-flowing traffic. Motorists who wish to travel in the less congested ETLs pay a toll that is collected at highway speed by an E-ZPass<sup>TM</sup> transponder.

### TRANSIT MODE DESCRIPTIONS

- **Light Rail Transit** (LRT) is an electric railway system that can operate single cars or short trains. The LRT system proposed for this project would operate completely on a dedicated right-of-way or guideway, separated from traffic on local streets.
- **Bus Rapid Transit** (BRT) is a mode of transit that has characteristics common to both conventional bus systems and LRT. BRT for this project would use rubber-tired transit vehicles, most likely articulated buses, along a reserved transit guideway. Vehicles would be similar to LRT vehicles in performance and appearance. However, they would be able to leave the transit guideway to access local destinations using the local road network.
- **Premium Bus** service would provide bus service using dedicated (managed) highway lanes and direct access ramps to travel from station to station. Premium bus provides limited stop service and non-stop service between origins and destinations.

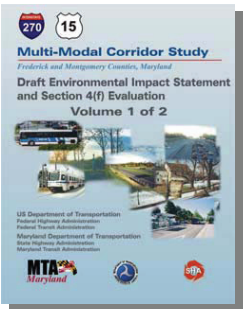
represents the roadway alternative and the letter represents the transit alternative. The roadway alternatives are numbered 3, 4, 5, 6 and 7. The transit alternatives are lettered A (LRT), B (BRT) and C (Premium Bus), where C is only paired with roadway Alternative 5. The project would be designed and constructed in a manner that minimizes adverse effects on the environment and maximizes benefits to the communities.

As part of the study, the project team must quantify and provide a comparison of potential environmental effects of each alternative under consideration. The environmental effects of the No-Build, TSM/TDM, and Alternatives 3A/B, 4A/B, and 5A/B/C are quantified in the Draft Environmental Impact Statement (DEIS), issued in 2002.

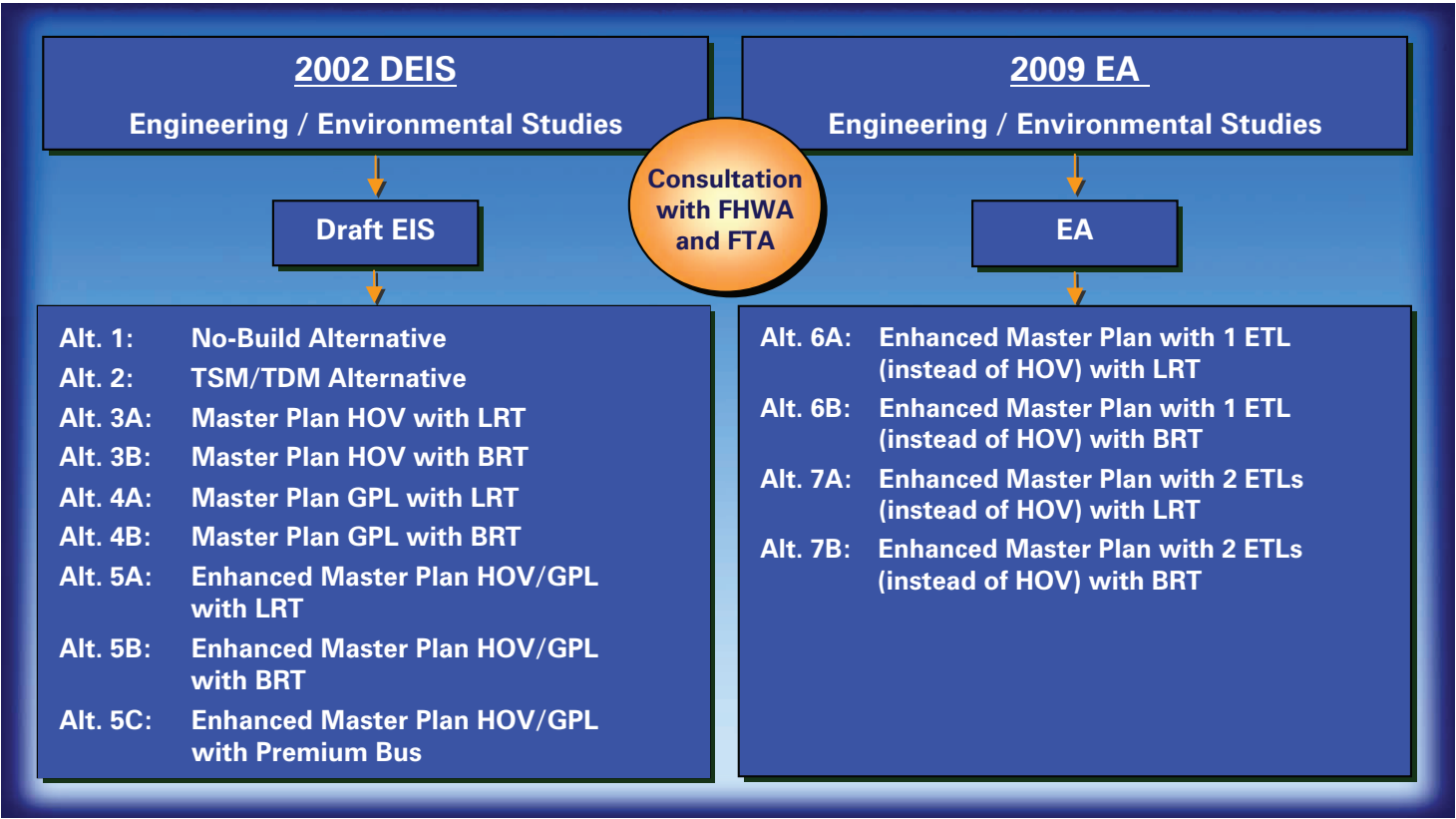
This Alternatives Analysis/Environmental Assessment (AA/EA) evaluates four additional build alternatives, Alternatives 6A, 6B, 7A, and 7B. Additionally, Alternatives 6.1: No-Build Transit and 6.2: Transit TSM are introduced for the purposes of analyzing the performance of transit investment alternatives consistent with Federal Transit Administration (FTA) New Starts requirements.

## Purpose of This Alternatives Analysis/Environmental Assessment (AA/EA)

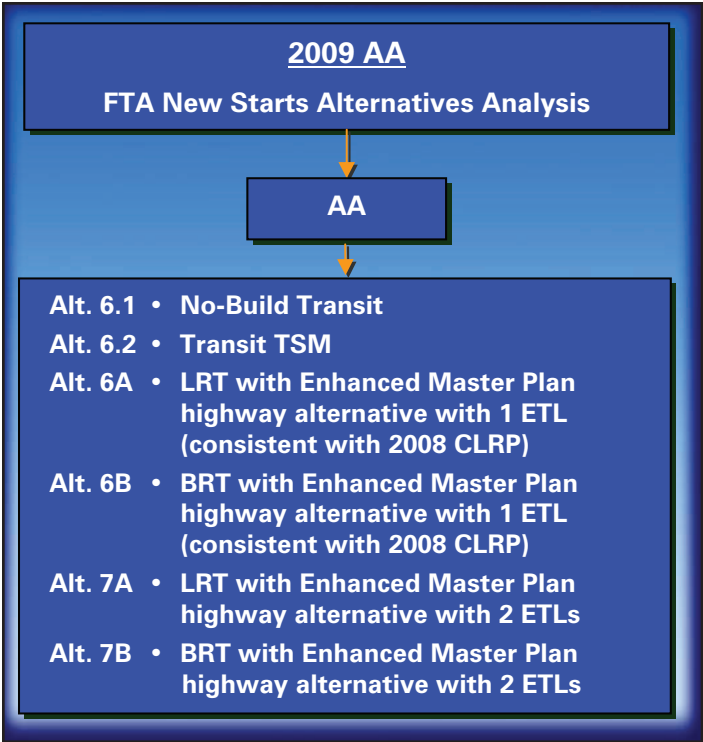
The AA/EA serves as a companion to the DEIS issued in 2002. The companion designation means Alternatives 6A/B and 7A/B have been examined to the same level of environmental review as the alternatives that are presented in the 2002 DEIS. The assessment responds to a decision made in 2004 to study two additional highway alternatives that include ETLs. In this document the potential transportation and environmental impacts, costs, and benefits of the new alternatives, Alternatives 6A/B and 7A/B, are introduced, along with any changes to the planning environment that have occurred since the DEIS was published, such as changes to the existing land use, changes to county and city master plans, and projected future traffic numbers.



## Alternatives Evaluated in 2002 DEIS and 2009 EA







The evaluation of the alternatives was an iterative process that included extensive coordination with public agencies, elected officials, stakeholders, and members of the public. Alternatives were evaluated for environmental impacts, engineering constraints, transportation benefits, economic development opportunities, costs, and cost-effectiveness.

The AA/EA summarizes a presentation and analysis of detailed technical data contained in the technical reports, incorporates that information by reference, and provides the information necessary to make an informed decision. A CD containing the AA/EA and the supporting technical reports is provided with both the printed version of the AA/EA and the standalone Executive Summary. The technical reports provide information about the methodologies and assumptions used to form the technical analyses and findings basis summarized in the AA/EA. In addition to technical report references, the AA/EA document includes “call-outs” to the 2002 DEIS to make cross-referencing easier between the two documents and for the various alternatives. A second CD is also provided that includes the 2002 DEIS for easier review with the AA/EA document.

This document is also an Alternatives Analysis, prepared in accordance with FTA requirements guiding the

development of federally funded major capital transit investment projects. The requirements of the AA process are intended to allow for an objective, efficient, and fully-informed evaluation and rating of the transit projects from throughout the United States seeking funding under the Federal New Starts process. The FTA discretionary New Starts program is the federal government’s primary financial resource for funding locally planned, implemented, and operated transit “guideway” capital investments.

The purpose of an AA document is to evaluate the costs and benefits of a range of transportation alternatives designed to address a specific transportation purpose and need for a specific transportation corridor. The information presented is intended to support decision-making on a preferred investment strategy to take into more detailed study and development.

Two alternatives are included in this document that are subject only to analyses of costs and benefits in accordance with FTA guidance for Alternatives Analysis. These include Alternative 6.1: No-Build Transit and Alternative 6.2: Transit TSM. These transit alternatives are introduced to facilitate analysis of the benefits and cost-effectiveness of the capital improvements included in the build alternatives against the much lower cost no-build and transit TSM scenarios. Alternatives 6.1 and 6.2 assume the same highway build scenario as Alternatives 6A and 6B, which is consistent with the most recently adopted Constrained Long Range Transportation Plan (CLRP) for the National Capital Region.

Organization of this AA/EA

The Signature Page presents the signatures of the officials approving the findings contained in the AA/EA document. Also included are:

- The project description
- Lead agencies
- A list of locations where the AA/EA is available for public review
- Information on upcoming AA/EA public hearings and the public comment period
- Contact information for any comments, questions, and requests for information on the I 270/US 15 Multi-Modal Study.

The Executive Summary is a standalone section that briefly presents the major components and findings of the study.

**Chapter I** – Purpose and Need describes the purpose and need for the highway and transit improvements in the I-270/US 15 Multi-Modal Study corridor, and highlights the major transportation issues and related project goals and objectives.

**Chapter II** – Alternatives Considered summarizes the alternatives initially developed as part of the 2002 DEIS and describes the new alternatives presented in this document.

**Chapter III** – Transportation Facilities, Services and Mobility Impacts describes the potential long-term impacts of the alternatives relative to roadways, public transportation, rail stations and parking, bicycle and pedestrian facilities.

**Chapter IV** – Environmental Resources and Consequences describes the potential long-term and in some cases short-term impacts of the alternatives on key resources of the natural and built environment. Chapter IV also includes a summary of the Section 4(f) resource evaluation.

Each section of Chapter III and Chapter IV begins with a brief description of the regulatory framework governing the analyses and the methods used, followed by a description of existing conditions, forecasts of those conditions to 2030 (both with and without the alternatives), and any beneficial or adverse effects of the alternatives. Where appropriate, possible minimization and mitigation measures are identified for unavoidable impacts

**Chapter V** – Transit Costs and Funding focuses on transit project costs and funding strategies in accordance with FTA requirements for Alternatives Analysis. It compares the capital, operating, and maintenance costs for the TSM and build alternatives, presents potential strategies for financing those costs, and identifies potential funding shortfalls and implementation strategies.

**Chapter VI** – Evaluation of Alternatives presents the results of the Alternatives Analysis described in previous chapters by highlighting the relative benefits and adverse impacts of the alternatives. Chapter VI uses

the information presented in Chapters III, IV, and V to discuss how well the alternatives would address the project purpose, needs, and goals. This chapter also describes key measures and how they could affect decision-making concerning the choice of a preferred alternative.

**Chapter VII** – Comments and Coordination presents a summary of the testimony received from the DEIS Public Hearings, the Express Toll Lane workshops, and the written comments received from both citizens and elected officials. Coordination with project stakeholders and local, state, and federal agencies is also summarized in this section.

Appended to this AA/EA are the following:

- Plan Sheets showing the proposed I-270/US 15 roadway improvements (Sheets HWY 1 through 15), relocated MD 75 (MD 75) and the proposed alignment for the CCT (Sheet TRAN 1 through 6).
- Summary of the Relocation Assistance Program of the Maryland State Highway Administration
- Farmland Conversion Coordination
- List of Revelant Coordination (Agencies, Communities, Elected Officials and Select Agency Correspondence from 2002 DEIS)
- References
- List of Contributors

Attached to the printed version of the AA/EA is a CD containing the AA/EA and the supporting technical reports, which include the methods and assumptions that provided the basis for the technical analyses and findings summarized in the AA/EA.

The technical reports included on the CD are:

- Socio-Economic/Land Use Technical Report
- Natural Environmental Technical Report
- Noise and Vibration Technical Report
- Hazardous Materials Technical Memorandum
- Air Quality Technical Report
- Draft Section 4(f) Evaluation
- Detailed Definition of Alternatives Report
- Transit Capital Cost Estimation Technical Memorandum
- CCT Travel Demand Forecasting Phase I Technical Memorandum



- Indirect and Cumulative Effects (ICE) Analysis Technical Report
- Corridor Cities Transitway Operations and Maintenance Cost Estimate Report
- Corridor Cities Transitway – Operations and Maintenance Facilities Alternatives Development and Analysis – Final

A second CD is provided that also contains the I-270/US 15 Multi-Modal Study DEIS published in 2002.



[www.i270multimodalstudy.com](http://www.i270multimodalstudy.com)

## Document Availability

This AA/EA document and its supporting technical reports, along with the 2002 DEIS and its supporting technical reports, are available for viewing and download on the project website, [www.i270multimodalstudy.com](http://www.i270multimodalstudy.com).

Printed copies of the AA/EA document and supporting technical reports are available for public review through the end of the comment period at selected public libraries, the Maryland-National Capital Park and Planning Commission office in Montgomery County, the Montgomery County Upcounty Regional Services Center in Germantown, the SHA Headquarters in Baltimore, the

SHA District 3 Office in Greenbelt, the SHA District 7 Office in Frederick, the MTA Headquarters in Baltimore, and at the Rockville, Gaithersburg, and Frederick city halls. Any person with special needs, such as English language assistance or Braille, should contact either the SHA or the MTA for assistance.

## Informational Contacts

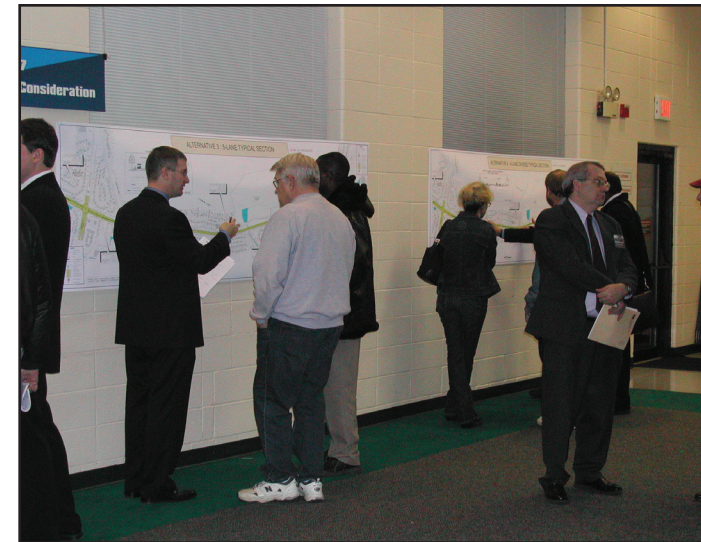
Additional information concerning this project may be obtained by by contacting:

**Mr. Bruce Grey**  
Deputy Director  
Office of Planning and Preliminary Engineering  
State Highway Administration  
707 North Calvert Street, Mail Stop C-301  
Baltimore, Maryland 21202  
Hours: 7:30 AM to 4:30 PM, Mon-Fri  
Phone: (410) 545-8500

**Ms. Diane Ratcliff**  
Director  
Office of Planning  
Maryland Transit Administration  
6 Saint Paul Street, Suite 902  
Baltimore, Maryland 21202  
Hours: 8:00 AM to 5:00 PM, Mon-Fri  
Phone: (410) 767-3787

**Mr. Russell Anderson, P.E.**  
Project Manager/Transportation Engineer  
Office of Planning and Preliminary Engineering  
Maryland State Highway Administration  
707 North Calvert Street, Mail Stop C-301  
Baltimore, MD 21202  
Hours: 7:30 AM to 4:30 PM, Mon-Fri  
(410) 545-8839

**Mr. Rick Kiegel, P.E.**  
Project Manager  
Office of Planning  
Maryland Transit Administration  
6 Saint Paul Street, Suite 902  
Baltimore, Maryland 21202  
Hours: 8:00 AM to 5:00 PM, Mon-Fri  
Phone: (410) 767-1380



Public Hearing

## Next Steps

No sooner than 15 days after the document is made available for public review, public hearings will be held to record public and agency comments on the proposed project. These comments will be included in the project records and will be responded to in the Final Environmental Impact Statement (FEIS).

After consideration of comments received from the public and review agencies, the State of Maryland will select a Locally Preferred Alternative (LPA) in consultation with county and local jurisdiction officials and elected officials. The selection will be based on weighing the opportunities and trade-offs with respect to costs, benefits, environmental and socio-economic impacts, and affordability of the alternatives. The LPA could include project implementation phasing, along with a plan and schedule for subsequent implementation phases.





# Executive Summary

## Administrative Action

- ( X ) Environmental Assessment
- ( X ) Alternatives Analysis
- ( ) Draft Environmental Impact Statement
- ( ) Section 4(f) Evaluation

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## Description of Action/Purpose and Need

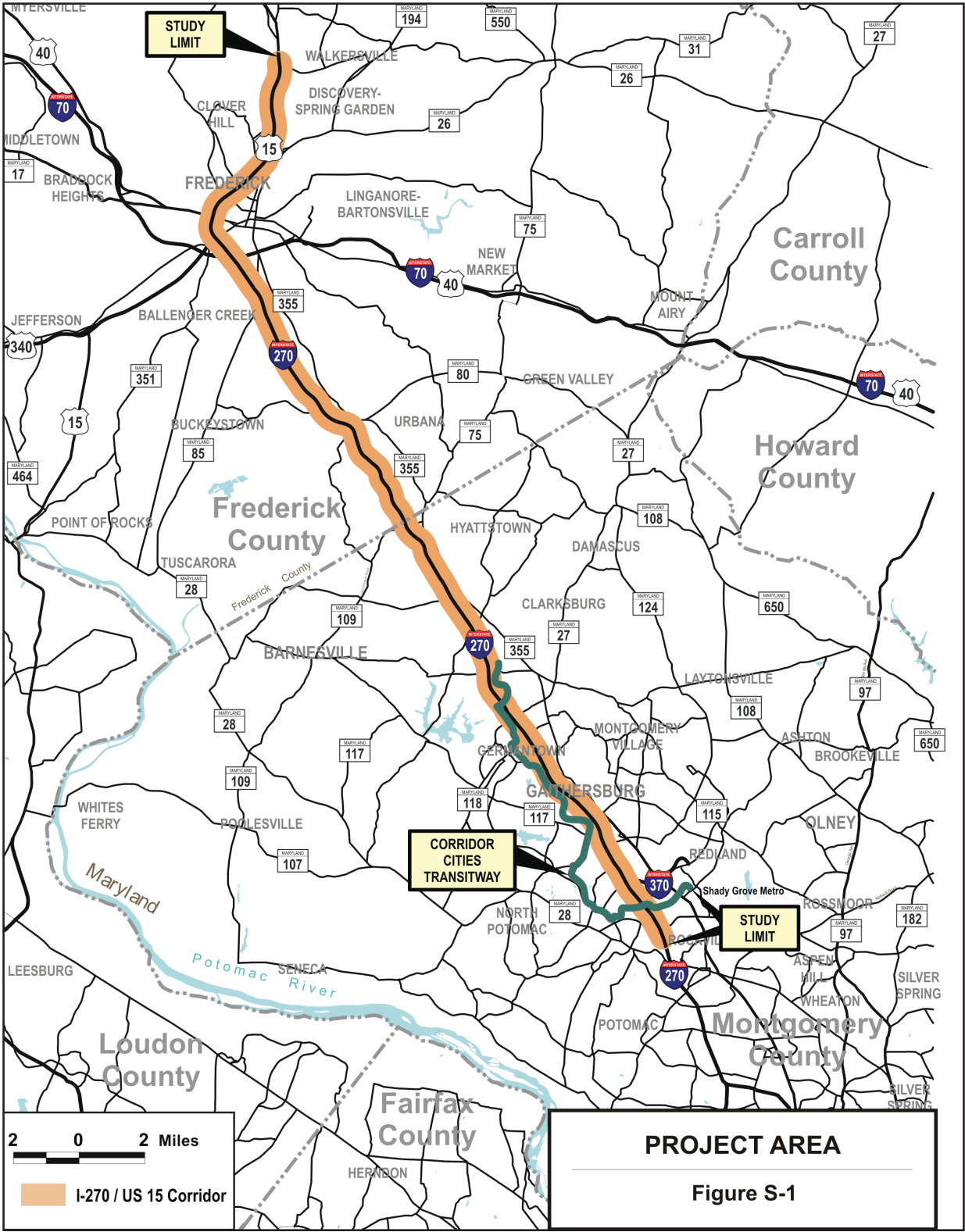
### Description of the Action

The Maryland State Highway Administration (SHA) and Maryland Transit Administration (MTA) are developing a multimodal transportation project along the I-270/US 15 Corridor in Montgomery and Frederick Counties, Maryland. The project study area extends from I-270 at Shady Grove Road in Montgomery County to the US 15/Biggs Ford Road intersection in Frederick County. The project includes the development of transportation systems management (TSM)/transit demand management (TDM) strategies, enhancing the highway corridor with additional capacity in the form of general purpose and managed lanes, and constructing a new transit corridor for either light rail transit (LRT) or bus rapid transit (BRT). The project study area is shown in *Figure S-1*.

Initially, the study presented alternatives in a Draft Environmental Impact Statement (DEIS) that was published in June 2002. This document is intended to serve as a companion to the 2002 DEIS, and presents two new highway project alternatives that were developed since the 2002 DEIS was published for public review and comment.

This Alternatives Analysis/Environmental Assessment (AA/EA) document serves two purposes. As an EA, the document supplements the environmental evaluation presented in the 2002 DEIS. This EA provides an environmental evaluation, as required by the National Environmental Policy Act (NEPA) of two new highway build alternatives that propose Express Toll Lanes<sup>SM</sup> (ETLs<sup>SM</sup>) along with two transit alternatives that will provide LRT or BRT on the Corridor Cities Transitway (CCT). The EA provides the information that will allow a comparison of the DEIS alternatives and the new ETL alternatives to guide decision makers in the selection of a Locally Preferred Alternative and, finally, a Selected Alternative for construction.

Figure S-1: Project Area







As an AA, this document provides a key part of the Federal Transit Administration (FTA) process for advancing transit projects that are seeking federal New Starts funding. This AA evaluates the performance of two build transit alternatives, LRT and BRT, and a TSM alternative that supplements the proposed highway alternatives. The AA will guide local decision-makers in selecting a preferred transit mode and alignment that best meets the transportation needs of the corridor, and ensures that the project is technically and financially feasible.

Additional information about the document purpose is included in the Introduction. The Purpose and Need and Goals and Objectives are detailed in **Chapter I**.

Project Purpose

The purpose of the I-270/US 15 Multi-Modal Corridor Study is to investigate options to address congestion, improve mobility options and improve safety conditions along the I-270/US 15 Corridor.

The I-270/US 15 Corridor is a vital component of the surface transportation system in the Metropolitan Washington region and includes portions of I-270 and US 15 in Montgomery and Frederick counties. The I-270/US 15 Corridor provides an essential connection between the Washington, DC metropolitan area and both central and western Maryland and is an important corridor for carrying local and long distance trips, both individual and commercial.

Project Need

The need for the project results from the mobility challenges presented by the growing traffic congestion in the I-270/US 15 Corridor. The I-270/US 15 Corridor is currently served by a variety of transportation modes (including interstate highway, high-occupancy vehicle lanes, commuter rail, and bus service) and intermodal opportunities (including park and ride lots and Metrorail). However, even with the variety of modal options available, the corridor is highly congested at many locations within the project area. There are no efficient, high-speed alternative routes to carry north/south vehicle traffic. The area surrounding the corridor is served by local bus routes. Buses operate in mixed traffic with frequently congested conditions that can

create unreliable service and slow travel times. Metrorail service ends at the southern end of the study area at Shady Grove. Parking serving Metrorail commuters is at capacity at the Shady Grove Metrorail station.

MARC trains intersect the corridor and have several stops in the I-270/US 15 study area, including stops in Frederick, Monocacy, Washington Grove, and Gaithersburg, and more directly in the CCT corridor at Germantown and Metropolitan Grove. MARC provides direct access to the Metrorail Red Line at Rockville and Silver Spring stations. However, the MARC service overall is not conveniently located to serve trips from the highly developed and populated areas of southeastern Frederick County and northern Montgomery County. More about the MARC system is discussed in Chapter 1 in the section entitled *Current Transit Services*.

Congestion in the corridor is expected to increase. Average daily traffic volumes on I-270 and US 15 are projected to increase by between 12 and 76 percent along various segments of the corridor by the year 2030. The greatest increase is predicted on the roadway segment of I-270 between MD 80 and MD 85 (76 percent), and the lowest increase (12 percent) is predicted on US 15 between Opossumtown Pike and MD 26. The demand for transit service, especially rail transit, in the area is strong. Growth in demand for transit trips within the study area in Montgomery County in the Gaithersburg/Derwood and Germantown/Clarksburg transit market districts, is anticipated to have a 99 to 110 percent increase by 2030 respectively. This represents a larger growth rate than the expected growth in population (26 percent). The Frederick County market district is anticipated to have over 450 percent growth in demand for transit trips. There is also a strong need for reverse commuter transit options to service the projected employment growth along the corridor, especially through the Montgomery County “Technology Corridor.”

Major factors affecting travel through the project area are continuing population and employment growth in Montgomery and Frederick Counties. Montgomery County’s population grew by approximately 16 percent from 1990 to 2000, and is forecast to increase by almost 26 percent by 2030, surpassing one million persons. Frederick County’s population grew by approximately

30 percent between 1990 and 2000, and is forecast to increase by 67 percent by 2030, to almost 325,000 persons. Employment is projected to increase by more than 40 percent in Montgomery County and by more than 70 percent in Frederick County by 2030. A pipeline of development projects in Montgomery and Frederick Counties includes residential, mixed-use, office, retail and light industrial projects that are planned, approved, and/or under construction.

Even in the current tumultuous economic environment, developers and Montgomery County continue to stand by the projects within this pipeline and the analysis assumes their development as planned. Nevertheless, we recognize that there is a degree of uncertainty with regard to the future of the development, particularly in light of the current credit market and similar factors that might delay or even prevent some projects going forward.

Transportation improvements, including roadway widening projects, new interchanges where crossroads intersect with I-270 or US 15, new transit centers, and roadway extensions are underway or in the planning stage. None are anticipated to fully provide the solution to the increased congestion that continued development will cause. In 2000, the US Census indicated that nearly 22 percent of workers in Montgomery County, an estimated 99,700 commuters, work within Washington DC. Annual ridership on the Shady Grove Metrorail is over 7.5 million and almost two million on the MARC Brunswick Line. Bus service, including MTA’s Route 991 Commuter Bus, WMATA’s MetroBus (Routes J7, J9 and Q2), and Montgomery County’s Ride On Bus, serve over 31.5 million passengers annually. Transit trips are projected to increase 72 percent by 2030.

Project Goals

Five goals have been identified that are used to evaluate the proposed transportation strategies.

**Support Orderly Economic Growth** – Support the orderly economic development of the I-270/US 15 Corridor consistent with the local government land use plans and Maryland’s Economic Growth, Resource Protection and Planning Act.

**Enhance Mobility** – Provide enhanced traveler mobility throughout the I-270/US 15 Corridor by

optimizing travel choices by destination, mode and route; minimizing delay; and improving the safety and overall efficiency of the transportation system.

**Improve Goods Movement** – Facilitate the movement of goods within and through the I-270/US 15 Corridor and improve the delivery of services in support of the regional and local economies.

**Preserve and Protect the Environment** – Deliver transportation services in a manner that preserves, protects and enhances the quality of life and the social, cultural and natural environment in the I-270/US 15 Corridor.

**Optimize Public Investment** – Provide a transportation system in the I-270/US 15 Corridor that makes optimal use of existing transportation infrastructure while making cost effective investments in facilities and services that support other project goals.

Alternatives Considered

Alternatives Considered in the 2002 DEIS

The alternatives considered in the 2002 DEIS included a No-Build Alternative, a TSM/TDM Alternative, and Build Alternatives that each consisted of a TSM/TDM component, a highway component, and a transit component. Refer to the DEIS, Chapter II for further details of each alternative. The DEIS is provided on the DVD included with this document.

- The No-Build Alternative represents existing conditions, with only routine maintenance and spot improvements. The No-Build Alternative, as well as all of the other alternatives, includes programmed improvements that are listed in the Metropolitan Washington Council of Government (MWCOG) Constrained Long Range Plan (CLRP), except the I-270/US 15 Multi-Modal Corridor improvements. The No-Build Alternative provides a basis to compare each of the build alternatives.
- Alternative 2: TSM/TDM includes a number of relatively low-cost strategies, which are meant to improve the overall operation of the existing transportation system without adding capacity. TSM measures include increased local bus service, enhanced feeder bus service to existing fixed guideway transit, the addition of intelligent transportation



HIGHWAY BUILD ALTERNATIVES

The highway build alternatives considered are numbered 3, 4, 5, 6 and 7. Each highway alternative is paired with either the light rail (LRT) transit option (A), the bus rapid transit option (B), or the Premium Bus option (C). Alternatives are thus identified as 3A, 3B, 4A, 4B, 5A, 5B, 5C, 6A, 6B, 7A and 7B. When the highway component is the same for more than one transit option, the alternatives are referred to as 3A/B, 4A/B, 5A/B/C, 6A/B and 7A/B.

systems (ITS) to improve traffic flow and incident management on I-270, and interactive transit information made available at major employment centers. TDM measures include adding park and ride lots, rideshare programs, vanpool, pedestrian and bicycle programs, and telecommuting and flexible work hours programs. The TSM/TDM alternative also includes programmed improvements.

- Alternatives 3A/B consist of a TSM/TDM component; a highway component with general purpose (GP), high-occupancy vehicle (HOV), and collector-distributor (CD) lanes, proposed interchanges, and improvements to existing interchanges; and a transit component with either LRT (3A) or BRT (3B) on the CCT from the Shady Grove Metrorail station to the Communications Satellite, Inc. (COMSAT) area in Clarksburg.
- Alternatives 4A/B consist of a TSM/TDM component; a highway component with GP, HOV, and CD lanes; proposed interchanges and improvements to existing interchanges; and either LRT (4A) or BRT (4B) on the CCT. Alternatives 4A/B are the same as Alternatives 3A/B except between MD 121 and I-70, where the HOV lanes of Alternatives 3A/B would be replaced by general purpose lanes.
- Alternatives 5A/B/C consist of a TSM/TDM component; a highway component with GP, HOV, and CD lanes; proposed interchanges, improvements

to existing interchanges; and either LRT (5A) or BRT (5B) on the CCT alignment or Premium Bus on the HOV Lanes (5C). This alternative includes one additional GP lane (beyond those proposed in Alternatives 3A/B and 4A/B) in each direction along I-270 between MD 121 and the Montgomery/Frederick county line.

Alternatives Considered in the AA/EA

The alternatives considered in this AA/EA include the No-Build Alternative and two build alternatives: Alternative 6A/B and Alternative 7A/B. Alternatives considered in the AA include: Alternative 6.1: No-Build Transit; Alternative 6.2: Transit TSM; and Alternatives 6A/B and 7A/B. Refer to **Chapter II** for more detailed information.

Alternatives 6A/B and 7A/B each consist of a TSM/TDM component; a highway component with general purpose lanes and ETLs; proposed interchanges and improvements to existing interchanges; and a transit component (LRT or BRT on the CCT alignment). Alternatives 6A/B and 7A/B have an identical physical footprint with different numbers of ETL and general purpose lanes in the section of roadway between the proposed Newcut Road interchange and I-70.

The alternatives under consideration in this AA/EA are as follows:

Alternative 1: No-Build Alternative

The No-Build Alternative, updated to 2008, provides a basis to compare the build alternatives and represents existing conditions, with only routine maintenance and programmed improvements listed in the MWCOG CLRP. The existing I-270 corridor is a multi-lane, access-controlled highway with GP lanes, HOV lanes, auxiliary lanes and CD lanes. The existing US 15 roadway corridor is a multi-lane, partially access-controlled roadway with GP lanes. The existing transit component includes local and express buses on existing roadways; Metrorail train service from Washington, DC to the Shady Grove Metrorail Station; and MARC train service from Washington, DC to West Virginia on the CSX Metropolitan Line through the southern portion of the project study area that serves the Potomac River

valley with regional stops in Rockville, Gaithersburg, Germantown and Frederick.

Alternatives 6A/B and 7A/B – Highway Component

The highway component of Alternatives 6A/B and 7A/B would provide general purpose lanes, auxiliary lanes, ETLs, additional interchanges and improvements to existing interchanges. The two alternatives are designed on an identical physical footprint throughout their length.

ETLs are generally new capacity tolled highway lanes which can be combined with general purpose highway lanes, providing motorists a choice for a relatively congestion-free trip when travel time is critical. In Maryland, the primary purpose of ETLs is to provide new capacity to existing highways and to provide a toll revenue stream to help advance the construction of key highway improvement projects. ETLs provide everyone the opportunity of paying a fee to drive in separate, relatively free-flowing lanes on a given trip or remaining in the general purpose lanes. Toll rates would vary based on demand, either by time of day or actual traffic conditions, and would be collected electronically at full highway speeds. ETLs would be barrier-separated from general purpose lanes and occupy the median-side lanes in both directions. Access would be gained via either open access areas between the general purpose lanes and ETLs or direct access ramps at select interchanges.

The highway component of Alternatives 6A/B and 7A/B would have the following configuration:

- Both Alternatives 6A/B and 7A/B would have four GP lanes and two ETLs in each direction between Shady Grove Road and MD 124.
- Both Alternatives 6A/B and 7A/B would have three GP lanes and two ETLs in each direction between MD 124 and proposed Newcut Road.
- Alternative 6A/B would have three GP lanes and one ETL in each direction between proposed Newcut Road and MD 121, and Alternative 7A/B would have three GP lanes and two ETLs in this section.
- Alternative 6A/B would have two GP lanes and one ETL in each direction between MD 121 and north of MD 80, and Alternative 7A/B would have two

GP lanes and two ETLs in each direction in this section. The ETLs will terminate north of MD 80 in the vicinity of Park Mills Road.

- Alternative 6A/B would have three GP lanes in each direction from north of MD 80 in the vicinity of Park Mills Road to I-70, and Alternative 7A/B would have four GP lanes in each direction in this section.
- Both Alternatives 6A/B and 7A/B would have three GP lanes in each direction from I-70 north to Biggs Ford Road.

Alternatives 6A/B and 7A/B – Transit Component

The transit component of Alternatives 6A/B and 7A/B would provide a fixed guideway service on the proposed CCT alignment from the Shady Grove Metrorail Station to the COMSAT area in Montgomery County. Service would be provided by light rail or by bus on the guideway. Twelve new stations are proposed to be located at residential, mixed-use, and employment centers along the route. Four additional station locations have been identified as future facilities (beyond 2030) to be built as needed. A new Operations and Maintenance (O&M) facility would be constructed to service transit vehicles.

The transit component includes new feeder bus routes, new premium bus routes, park and ride facilities, and interactive transit information. A shared use hiker-biker trail adjacent to the transitway is also included.

The proposed CCT alignment is included as a component of Montgomery County’s master planning documents, and the proposed alignment of the hiker-biker trail is described in the *Montgomery County Countywide Bikeways Functional Master Plan* (2005).

Alternative 6.1: No-Build Transit

The No-Build Transit Alternative is identical to the highway component of Alternative 6A/B but without the transit component. The No-Build Transit Alternative includes the existing transit services and programmed improvements listed in the CLRP. This alternative is included to support the transit Alternatives Analysis.





Alternative 6.2 Transit TSM

The Transit TSM Alternative provides a baseline for the FTA cost effectiveness evaluation, an important component of the transit Alternatives Analysis. The Transit TSM Alternative is designed to provide comparable quality and levels of transit service at lower cost than Alternatives 6A/B, without major investment in a transit fixed guideway and using the same assumptions for the highway network as Alternatives 6A/B. The purpose of this alternative is to enable an effective comparison of different levels of investment in high quality transit between the Alternative 6.2: Transit TSM, Alternative 6A and Alternative 6B. Alternative 6.2 includes the operation of high-quality transit service to a comparable level as the CCT, but without construction of the exclusive transitway. Additionally, the Transit TSM alternative includes new premium bus routes from Frederick that will operate on I-270 managed lanes using direct access ramps with service to the corridor park and ride lots, major activity centers, and transit stations. Alternative 6.2 also includes enhanced feeder bus routes to Metrorail and MARC stations and programmed improvements listed in the MWCOG CLRP.

Summary of Transportation/ Mobility Impacts

The transportation characteristics and impacts of implementing the transit component of the I-270/ US 15 Multi-Modal Corridor project include effects on geographic coverage, hours of service, reliability of service, ride quality, trunkline and feeder service, frequency of service, transit travel times, estimated ridership (the number of transit trips taken), and traffic impacts. These are described in detail in **Chapter III**. Both the LRT (A) and BRT (B) alternatives are projected to improve service in the corridor with more frequent, faster service; improved reliability and ride quality; and better station amenities and information dissemination.

Geographic coverage and hours of service will generally mimic existing coverage and service times. By using a dedicated guideway, transit service is expected to be faster and more reliable than could be provided on existing, crowded roadways in mixed traffic. New stations would be equipped to provide real-time transit information as

EXPRESS TOLL LANES

The new highway build alternatives presented in this AA/ EA document propose the use of a type of managed lane called Express Toll Lanes (ETLs). ETLs are new capacity tolled highway lanes that operate in conjunction with toll-free lanes that will provide a relatively congestion-free trip when travel time is critical. The ETLs will use variable rate tolling to manage the amount of traffic, and thus the level of congestion, within the lanes. Alternatives 6A/B and 7A/B include the construction of new ETL lanes along the median of existing I-270.

The long-term vision of the Maryland Department of Transportation’s Managed Lane Network Initiative is to:

- Provide a new type of optional transportation service with reliable, relatively free-flowing travel for time-sensitive trips,
- Create infrastructure for regional express bus service on the busiest commuting routes,
- Provide increased roadway capacity in the most severely congested transportation corridors,
- Provide a sustainable solution and long-term congestion relief, and
- Make congestion relief projects affordable decades sooner than traditional approaches would allow.

The I-270 ETLs are part of a broader managed lane network planned in Maryland and northern Virginia. Roadways included in the managed lane network in Montgomery County in Maryland include the Intercounty Connector (ICC), I-270, and the Capital Beltway. In northern Virginia, the managed lane network includes the Capital Beltway, I-95, I-395, and the Dulles Toll Road.

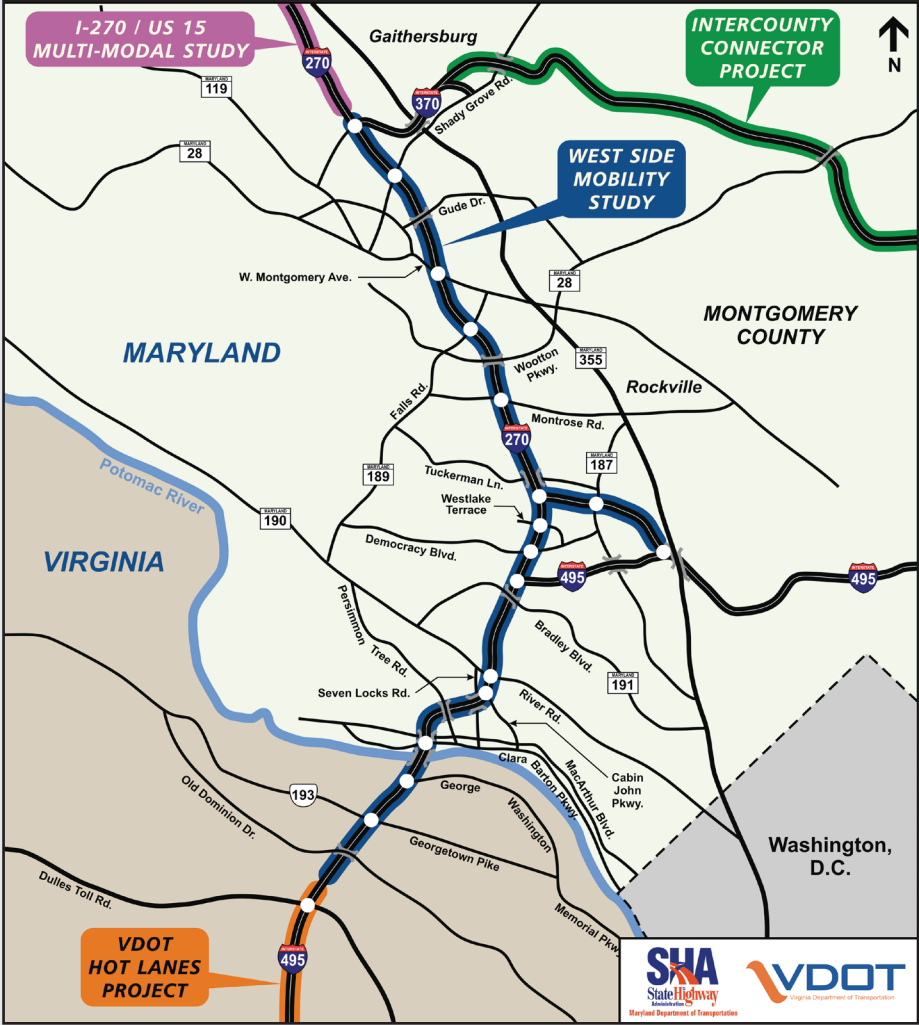
ETLs differ from the High Occupancy/Toll, or HOT, lanes that are being considered on I-95 and the Capital Beltway in Northern Virginia. On HOT lanes, a solo driver pays a fee to access High Occupancy Vehicle (HOV) lanes normally reserved for transit buses and carpools. HOVs generally are allowed to use HOT lanes free of charge or at a discounted rate. The HOT lane approach is not under consideration for the I-270 Corridor at this time primarily because of limitations on the ability to enforce lane restrictions and occupancy requirements.

The ETLs proposed in Alternatives 6A/B and 7A/B of the I-270/US 15 Multi-Modal Corridor study will be placed in the median of I-270, and will be barrier-separated from the toll-free general-purpose lanes. Access to the ETL is gained via direct access ramps at selected interchanges or through open access areas along I-270 that operate similar to the ramps between the “local” and “express” lanes on I-270 today.

The ICC is a fully-tolled roadway that connects to I-270 at the I-370 interchange. Alternative 6A/B and 7A/B provide a direct connection between the ICC and the segment of I-270 north of I-370 via a single ETL. The ETL is on the median side of the roadway and begins approximately one mile east of I-270. There is also approximately one mile between the ICC terminus and the ETL terminus on I-370.

The Virginia HOT Lane project extends from the I-95/I-395 interchange to Virginia Route 193. Vanpools, carpools, and motorcycles will utilize the lanes for free, while other vehicles could access the lanes by paying a toll. Tolls will be collected at highway speeds, and two HOT lanes are proposed in each direction in the median of I-95. Once the HOT Lane project is complete, the two HOT lanes will reduce to a single lane that will tie in with the HOV lane currently in place on I-270 in Maryland. A “non-enforcement” zone is proposed to allow single-passenger vehicles to merge out of the HOV lane and into the general-purpose lanes.

The West Side Mobility Study is a feasibility study that is being undertaken by SHA to introduce managed lanes between the northern limit of the Virginia HOT Lane project, the southern limit of the I-270/US 15 Multi-Modal Corridor study, and the ICC. The



feasibility study recommends adding two managed lanes in each direction from Virginia Route 193 to I-370. The pricing on the Virginia HOT lane system may be different than the Maryland managed lane system. The same “non-enforcement” zone will need to be in place to allow those who want to leave the HOT lanes to enter the general purpose lanes. It is anticipated that the West Side Mobility Study will develop into a NEPA planning study in the future. When complete, the project will connect the Virginia managed lane network to the northern portion of the Maryland managed lane network.





Table S-1: Transportation Impacts on Level of Service in 2030

	ALTERNATIVE 1: NO-BUILD	ALTERNATIVE 6A/B	ALTERNATIVE 7A/B
Total Miles of Roadway Lanes	64	64	64
Number of Miles with LOS F (peak direction)	43	31	17
Total Roadway Segments Analyzed	42	48	48
Number of Segments with LOS F	23	14	7

well as commuter amenities. Existing transit schedules may be adjusted to provide better connections to the new stations. New transit vehicles (light rail cars or articulated buses) would provide a comfortable ride. The BRT Alternative would also allow some connecting feeder bus routes to be continuous by using the guideway between stations.

Travel time between destinations is projected to be reduced by almost 40 percent (from a projected 57.6 minutes via highway versus 23.7 minutes via the CCT) from Shady Grove to COMSAT, and comparable savings would be realized for shorter trips. Ridership on the CCT is projected to average 28,000 riders daily and attract over 7,000 new transit riders. User benefit hours, a measure of the time saved by all transit passengers, are projected to average 5,800 hours daily.

The transportation characteristics and impacts of implementing the I-270/US 15 highway component with ETLs include the resulting forecasted Level of Service (LOS) improvements for the general purpose lanes on both roadways and the reduced number of LOS F peak direction roadway miles (*Table S-1*). Both Alternatives 6A/B and 7A/B highway improvements are projected to improve highway operating conditions for I-270 and US 15 over the future No-Build condition.

Following the AA/EA Alternatives public meeting, the traffic growth in the corridor for all 2002 DEIS and 2009 AA/EA alternatives will be re-examined for their traffic performance characteristics.

Summary of Environmental Impacts and Permits Required

The construction of a build alternative in the I-270/US 15 Corridor will cause impacts to the environment. Both Alternative 6A/B and Alternative 7A/B have the same physical footprint, as an equal width of pavement will be provided for both highway alternatives between MD 121 and north of MD 80, where there is a difference in the number of ETLs proposed. Therefore, the impacts of the two build alternatives are identical. These impacts are discussed in detail in **Chapter IV** and summarized in the following sections. *Table S-2* provides a summary of the potential impacts of Alternatives 6A/B and 7A/B, and includes a summary comparison of Alternatives 3A/B, 4A/B and 5A/B/C from the 2002 DEIS. *Table S-3* presents the impacts associated with the potential O&M sites. See Chapter III of the 2002 DEIS for further details about the impacts of Alternatives 3A/B, 4A/B and 5A/B/C.

All of the potential impacts are based upon the preliminary engineering designs for the project as shown on the *Plan Sheets* in **Appendix A** of this document and in Chapter XI of the DEIS. The design of Alternatives 6A/B and 7A/B incorporates 2:1 side slopes for the highway alternatives and allows a 25-foot buffer beyond the proposed cut/fill line or a 10-foot buffer beyond a retaining wall. Potential impacts may be reduced during final design.

Land Use

Alternatives 6A/B and 7A/B will alter existing land uses adjacent to the existing I-270/US 15 corridor and along the CCT master plan reserved alignment. These uses include residential and commercial land use, forest land, parkland and farmland. When selected, the O&M facility will alter existing and proposed land uses; however, some of the land uses surrounding the sites under consideration are zoned for commercial or transit-oriented development. Changes in land use are compatible with area master plans. Impacts to land use are detailed in **Chapter IV.A**.

Alternatives 6A/B and 7A/B would require the acquisition of 578 acres for the proposed right-of-way for the highway component. The transitway component would require the acquisition of 170 acres. An additional 12-40 acres of land would be required for the O&M facility, depending on the location that is selected.

Social Resources

Regional and county population and growth statistics define the area within which the project corridor is located. The social resources that are evaluated include neighborhoods and communities and community facilities. The impacts of the alternatives on minority and low-income (environmental justice) populations are identified and discussed. A full discussion of the social resources within the study area, the impacts of Alternatives 6A/B and 7A/B, and potential avoidance and minimization measures is presented in **Chapter IV.B** of this document.

Regional Population and Household Growth

Information about the current and projected future population of the Metropolitan Washington Region, Montgomery County and Frederick County are identified from the MWCOG Round 6.4a Cooperative Forecasting (Fall 2004). The year 2000 and forecasted 2030 population and household information for the Region, Montgomery County and Frederick County are shown in *Table S-4*. The Region's growth rate is the result of the long-term strength of the region's economy and high rates of national and international immigration to the area.

Montgomery County's future growth rate is slightly below the Region's, and Frederick County's growth is expected to be greater than the Regional growth rate.

Neighborhoods and Communities

Neighborhoods and communities were identified along the highway and transitway corridors. Incorporated places and Corridor Cities include the Cities of Gaithersburg and Rockville; Clarksburg; Germantown; Hyattstown; Montgomery Village; Shady Grove; and the City of Frederick. Abundant neighborhoods and neo-traditional communities lie adjacent to the I-270/US 15 Corridor. New or emerging communities include Cabin Branch, Upper Rock District, Casey East, Casey West, King Farm and Crown Farm in Montgomery County and the Villages of Urbana in Frederick County. New construction of residential subdivisions continues to add to the growing number of neighborhoods and communities in the study area.

The No-Build Alternative would have an impact on community sustainability and access, and would not address the growing congestion and safety hazards along I-270 and US 15.

The highway alignment will displace a large number of residences and requires minor property takings along I-270. Minimization evaluations completed to date show many of these potential displacements could be reduced. Overall, these displacements will have limited impacts on community cohesion due to their locations at the outside boundaries of the affected neighborhoods or communities. As some residences are displaced, newly exposed residents may experience more noise, light, and an altered visual setting as a result of the increased exposure to the new highway.

The proposed transit lines and stations would benefit the communities in Montgomery County by providing enhanced access to employment and social centers. The transitway stations would serve the communities and support transit-oriented development in those areas along the corridor for which it is appropriate. The presence of the transitway and associated stations and O&M facility would bring increased visual elements into adjacent neighborhoods. Also, where the transitway is close to residential areas, there are potential safety concerns.





Table S-2: Summary of Impacts of All Build Alternatives

RESOURCE		ALTERNATIVES 3A/B <sup>1</sup>	ALTERNATIVES 4A/B <sup>1</sup>	ALTERNATIVES 5A/B <sup>1</sup>	ALTERNATIVE 5C <sup>1</sup>	ALTERNATIVES 6A/B <sup>2</sup>	ALTERNATIVES 7A/B <sup>2</sup>	NOTES:
Natural Environment		DEIS Alternatives				AA/EA Alternatives		<div>1. Impacts of Alternatives 3A/B, 4A/B, 5A/B and 5C are from the 2002 DEIS.</div> <div>2. Alternatives 6A/B and 7A/B have an identical highway footprint.</div> <div>3. Total includes all soils in Frederick County (including prime farmland and soils of statewide importance) plus soils of statewide importance in Montgomery County (as calculated in the 2002 DEIS).</div> <div>4. Does not include potential impacts of transit O&amp;M facilities, as only one may be chosen.</div> <div>5. Potential direct and indirect impacts to two fish species: pearl dace and comely shiner.</div> <div>6. Does not include ephemeral streams</div> <div>7. Since 2002, the USACE has broadened the definition of waters of the US to include ephemeral channels. Ephemeral channels were not quantified in the 2002 DEIS.</div> <div>8. The Atomic Energy Commission Building was not evaluated for eligibility in the 2002 DEIS and is not included in these numbers. It is presumed that the DEIS alternatives 3A/B, 4A/B and 5A/B would have similar impacts as Alternatives 6A/B and 7A/B. Alternative 5C would only have highway impacts.</div> <div>9. Two resources, Seneca Creek State Park and the Atomic Energy Commission Building, are impacted by both highway and transitway. One additional property is only affected by noise.</div> <div>10. One park is impacted by both the highway and transit components.</div> <div>11. Highway component for Alternatives 6A/B and 7A/B includes one park and ride lot. Highway component for the 2002 DEIS alternatives includes three park and ride lots.</div> <div>12. Updates to displacements are ongoing.</div> <div>For O&amp;M facility impacts, see <b>Table S-3</b>.</div>
Total Limit of Disturbance (Edge of Pavement to new ROW)						1,476 acres	1,476 acres	
Highway Component						1,192 acres	1,192 acres	
Transitway Component						284 acres <sup>4</sup>	284 acres <sup>4</sup>	
Prime Farmland Soils	Total	284.6 acres	284.6 acres	290.2 acres	207.7 acres	742.6 acres	742.6 acres	
	Highway component	195.8 acres	195.8 acres	202.4 acres	207.7 acres	642 acres	642 acres	
	Transitway component	88.8 acres	88.8 acres	88.8 acres	n/a	100.6 acres <sup>4</sup>	100.6 acres <sup>4</sup>	
Soils of Statewide Importance	Total	367 acres <sup>3</sup>	367 acres <sup>3</sup>	391.9 acres <sup>3</sup>	339.6 acres <sup>3</sup>	488.7 acres	488.7 acres	
	Highway component					460 acres	460 acres	
	Transitway component					28.7 acres <sup>4</sup>	28.7 acres <sup>4</sup>	
Number of farmlands		30	30	30	27	38 parcels	38 parcels	
Active Farmland required		133 acres	133 acres	143 acres	106 acres	191 acres	191 acres	
Floodplains – Total		23 acres	23 acres	24 acres	21 acres	28.4 acres	28.4 acres	
	Highway component	20 acres	20 acres	21 acres	21 acres	25.6 acres	25.6 acres	
	Transitway component	3 acres	3 acres	3 acres	n/a	2.8 acres <sup>4</sup>	2.8 acres <sup>4</sup>	
Forest – Total		183 acres	183 acres	199 acres	180 acres	295.8 acres <sup>4</sup>	295.8 acres <sup>4</sup>	
	Highway component	156 acres	156 acres	172 acres	180 acres	268.6 acres	268.6 acres	
	Transitway component	27 acres	27 acres	27 acres	n/a	27.2 acres	27.2 acres	
Rare, Threatened and Endangered Species						Potential <sup>5</sup>	Potential <sup>5</sup>	
Waters of the US – Total Streams <sup>7</sup>		14,185 linear feet streams <sup>6,7</sup>	14,185 linear feet streams <sup>6,7</sup>	16,331 linear feet streams <sup>6,7</sup>	13,407 linear feet streams <sup>6,7</sup>	24,204 linear feet streams <sup>4,6,7</sup>	24,204 linear feet streams <sup>4,6,7</sup>	
Waters of the US – Total Wetlands		10.7 acres wetlands	10.7 acres wetlands	11.6 acres wetlands	10.7 acres wetlands	15.6 acres wetlands	15.6 acres wetlands	
Highway Component								
	Streams	11,245 linear feet	11,245 linear feet	13,391 linear feet	13,407 linear feet	20,198 linear feet	20,198 linear feet	
	Ephemeral channels <sup>7</sup>	–	–	–	–	10,812 linear feet <sup>7</sup>	10,812 linear feet <sup>7</sup>	
Wetlands		9.1 acres	9.1 acres	10.0 acres	10.7 acres	13 acres	13 acres	
	Transitway Component							
	Streams	2,940 linear feet	2,940 linear feet	2,940 linear feet	n/a	4,006 linear feet	4,006 linear feet	
Ephemeral channels <sup>7</sup>		–	–	–	–	1,646 linear feet	1,646 linear feet	
	Wetlands	1.6 acres	1.6 acres	1.6 acres	n/a	2.6 acres	2.6 acres	
Cultural Resources								
Historic Properties		7 properties <sup>8</sup>	7 properties <sup>8</sup>	7 properties <sup>8</sup>	5 properties <sup>8</sup>	7 properties/43.28 acres <sup>9</sup>	7 properties/43.28 acres <sup>9</sup>	
Highway component (number/acres)						5/31.17 acres	5/31.17 acres	
Transitway component (number/acres)						3/12.11 acres	3/12.11 acres	
Socioeconomic Resources								
Public Parks – Total		11 parks/37 acres	11 parks/37 acres	12 parks/44 acres	13 parks/48 acres	13 parks/42.72 acres <sup>10</sup>	13 parks/42.72 acres <sup>10</sup>	
Highway component (number/acres)						13/37.56 acres	13/37.56 acres	
Transitway component (number/acres)						1/5.16 acres	1/5.16 acres	
Right-of-Way – Total <sup>11</sup>		562 acres	562 acres	592 acres	446 acres	748 acres	748 acres	
	Highway component	392 acres	392 acres	422 acres	446 acres	578 acres	578 acres	
	Transitway component (not including O&M facility)	170 acres	170 acres	170 acres	n/a	170 acres	170 acres	
Residential Displacements <sup>12</sup> – Total		64-127	64-127	64-128	127-385	256-260	256-260	
Highway component						251	251	
Transitway component						5-9	5-9	
Business Displacements <sup>12</sup> – Total		4-11	4-11	4-12	2-11	13-43	13-43	
Highway component						10-11	10-11	
Transitway component (not including O&M facility)						3-32	3-32	
Air Quality - Number of receptors with CO violations		0	0	0	0	0	0	
Noise – Highway	Total monitored/modeled locations	55 locations	55 locations	55 locations	55 locations	55 locations	55 locations	
	Locations exceeding abatement criteria	26 residential impacts	26 residential impacts	26 residential impacts	35 residential impacts	27 residential impacts	26 residential impacts	
	Transitway	10 non-residential impacts	10 non-residential impacts	9 non-residential impacts	9 non-residential impacts	13 non-residential impacts	13 non-residential impacts	
Total monitored/modeled locations		15 locations	15 locations	15 locations		5 locations	25 locations	
	Locations exceeding abatement criteria	13 residential impacts with horn noise (LRT)	13 residential impacts with horn noise (LRT)	13 residential impacts with horn noise (LRT)		4 residential impacts (LRT)	4 residential impacts (LRT)	
		7 residential impacts without horn noise (LRT)	7 residential impacts without horn noise (LRT)	7 residential impacts without horn noise (LRT)				
Hazardous Materials – Number of affected properties		6 (4 highway, 2 transitway)	6 (4 highway, 2 transitway)	6 (4 highway, 2 transitway)	4 (highway)	6 (4 highway, 2 transitway)	6 (4 highway, 2 transitway)	





Table S-3: Summary of Impacts of the Potential O&M Sites

SITE	SHADY GROVE AREA SITES			METROPOLITAN GROVE AREA SITES			COMSAT AREA SITE	RANGE OF IMPACTS
	REDLAND ROAD LRT (1D)	REDLAND ROAD BRT (1D)	CRABBS BRANCH WAY BRT (6)	PEPCO LRT (4/5)	POLICE VEHICLE IMPOUND LOT LRT (6)	POLICE VEHICLE IMPOUND LOT BRT (6)	OBSERVATION DRIVE BRT (5)	
Total Right-of-Way, acres	17.7	16	12	22	18.7	18.7	40	12-40
Prime Farmland Soils, acres	7.4	5.89	8.23	2.68	12.48	12.48	6.29	2.68-12.48
Soils of Statewide Importance, acres	7.4	0	0.72	12.03	1.92	0.55	5.74	0.55-12.03
Floodplains, acres	0	0	0	0	0	0	0	0
Wetlands, acres	0	0	0	0	0	0	0	0
Streams, linear feet	0	0	0	660	486	486	0	0-660
Forest, acres	0	0	0	18.7	10.2	10.2	0.8	0-18.7
Historic Properties, number	0	0	0	0	0	0	0	0
Public Parks, number	0	0	0	0	0	0	0	0
Residential Displacements, number	0	0	0	4	0	0	1	0-4
Business Displacements, number	9	9	0	0	1	1	0	0-9

NOTE: Only one site will be chosen for an O&M Site. Any of the appropriate O&M sites (LRT sites for alternatives ‘A’ and BRT sites for alternatives ‘B’) could be constructed with any of the build alternatives (3A/B, 4A/B, 5A/B, 6A/B, or 7A/B).

Alternatives 6A/B and 7A/B will benefit residents by providing greater transportation access than the No-Build Alternative. Benefits associated with the project include overall improvement in access and mobility in the project area, enhancing connectivity by transit, automobile, bicycle and pedestrian modes. Transit benefits would be highest near stations, particularly for homes and businesses within walking distance.

Potential avoidance and minimization measures to reduce residential displacements may include retaining walls and narrower highway shoulders. Noise barriers and landscaping will be considered to minimize potential noise and visual impacts to neighborhoods and communities. The transitway stations, alignment, and O&M facility would be designed to complement the surrounding communities as much as possible. Safety fencing, warning signs, lighting and other measures would lessen the potential dangers associated with the highway and transitway.

Community Facilities and Services

Community facilities and services are located throughout the study area. They include 12 schools, two libraries, 16 places of worship, three post offices, six public safety departments (police/fire/rescue), eight hospitals and 20 parks and recreational facilities.

The No-Build Alternative would not impact any of these community facilities. Increased congestion might impede the fast response of emergency vehicles.

The build alternatives would require the acquisition of up to 45 acres from 13 existing parks and recreation areas. Potential impacts include loss of acreage and loss of buffer landscapes adjacent to the highway and transitway. None of the proposed transit O&M facilities would result in parkland impacts. Parks impacts are discussed again in Chapter IV.E.

Impacts to other community facilities would include the partial acquisition of right-of-way, including undeveloped land, from a church and a college. No adverse changes in access are anticipated for any community facilities.

Benefits associated with the build alternatives include improved access to parks and other community facilities and reduced travel times.

The completion of a build alternative would provide improved response times for emergency services; the inclusion of appropriate width shoulders on the highway lanes would provide an area for emergency responders’ travel as well as a refuge from the travel lanes for vehicles in emergency situations.

Potential mitigation strategies include the use of retaining walls, reduced shoulder widths and minor alignment shifts to avoid or minimize impacts.

Displacements and Relocations

Alternatives 6A/B and 7A/B would potentially displace between 256 and 260 residences (251 from highway construction and 5-9 from the transitway). Table IV-13 provides a summary of the locations of the potential residential displacements. During final design, additional minimization efforts, such as retaining walls and/or reduced shoulder widths, may reduce the potential displacements to between 12 and 83 (9-74 from highway impacts and 5-9 from the transitway).

Between 13 and 43 businesses may be displaced by the build alternatives (see Table IV-14). By incorporating retaining walls into the final design where appropriate, these impacts may be reduced to 5-36 businesses.

The construction of a transit O&M facility may displace up to 4 residences and up to 29 businesses, depending upon the site chosen. Tables IV-13 and IV-14 include the potential displacements associated with the O&M site locations being considered.

Affected property owners will receive relocation assistance in accordance with federal and/or state requirements depending on the funding source. The Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, with implementing regulations at 49CFR Part 24, will provide guidance for the relocation process.

Environmental Justice (EJ)

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, directs federal agencies to “promote nondiscrimination in federal programs substantially affecting human health and the environment, and provide minority and low-income communities access to public information on, and an opportunity for public

Table S-4: Regional and County Population and Households, 2000 to 2030

	METROPOLITAN WASHINGTON REGION			MONTGOMERY COUNTY			FREDERICK COUNTY		
	2000	2030	% GROWTH	2000	2030	% GROWTH	2000	2030	% GROWTH
Population (in rounded millions)	4.6	6.2	35 %	0.87	1.1	26 %	0.20	0.32	67 %
Households (inrounded millions)	1.7	2.4	41 %	0.32	0.42	31 %	0.07	0.12	71 %

Source: MWCOG Round 6.4a Cooperative Forecasting (Fall 2004)





participation in, matters relating to human health or the environment.” The Order directs agencies to ensure that:

- They do not discriminate on the basis of race, color, or national origin.
- They identify and address disproportionately high and adverse human health or environmental effects of their actions on minority and low-income communities.
- They provide opportunities for community input in the NEPA process, including input on potential effects and mitigation measures.

The analysis identified 21 census block groups that met the threshold where there could be a potentially disproportionate number of minority or low-income persons affected by the project. The block groups that met the minority EJ threshold are located adjacent to the corridor between I-370 and MD 124 in Montgomery County and north of MD 80 in Frederick County. These affected areas of EJ populations were compared to areas of no-impact or less impact to determine if the environmental effects could be considered “disproportionately high and adverse” on minority populations and/or low-income populations. The potential effects on land use, community facilities and services, air, noise, public health and safety, visual effects, and traffic and transportation are comparable throughout the corridor, and generally occur equally on both sides of the highway. Impacts and proposed mitigations in EJ areas were reviewed with regard to the following impact categories: displacements and relocation; community cohesion and access; economic activity; visual conditions; noise; and traffic and transportation.

*Displacements and Relocation*

Of the 256-260 potential displacements, 244 are located in areas considered potential EJ areas: between I-370 and MD 117 in the Brighton West (81 residences), London Derry (150 residences) and Caulfield (one residence) communities in Montgomery County and in the Foxcroft II community in the City of Frederick. The extent of the proposed impacts with regard to these resources would not be considered a disproportionately high and adverse effect under the EJ

guidelines. However, the potential number of property displacements and adverse effects in EJ areas, when compared to non-EJ areas along the corridor, suggests a disproportionately high or adverse impact. Alternatives 6A/B and 7A/B follow existing I-270 and include relatively equal widening on both sides of the roadway for the entire length of the project. The highway design is similar in other areas along the corridor but results in more adverse effects in the EJ areas due to the density of the residential areas and their proximity to the highway.

The widening of I-270 would result in unavoidable adverse effects to EJ areas on both sides of the roadway. Given that the corridor widening is relatively equal on both sides of the existing roadway, the potential impacts to adjacent EJ areas will be generally distributed equally on both sides, as well, with no intent to incur greater impacts to one side of the roadway and avoid impacts to the other side. The large number of potential displacements in these EJ areas (compared to other areas along the corridor) may be reduced through the use of retaining walls and narrowed shoulders that will be determined during design.

The transitway will also affect the same residence in the Caulfield community. A potential O&M site in this same census tract would displace up to four additional residences in this area. The final location of an O&M facility for the transitway has not yet been identified, and this site may not be chosen. These displacements may be considered a disproportionately high or adverse impact to EJ populations if this site is chosen.

*Community Cohesion and Access*

The alternatives would not affect community cohesion in the traditional sense, as the communities and the impacts to those communities are located adjacent to an existing highway facility. The improvements would not divide communities. The loss of neighbors adjacent to the highway would interrupt the sense of community cohesion as they are relocated. There are no impacts to access with the build alternatives. Relocations within the same neighborhoods, if available, could minimize the sense of loss of community.

*Economic Activity*

The analysis identified positive economic impacts associated with the project including potential increases in property value due to increased transit access, improved travel time in both ETLs and general purpose lanes, and the addition of three transitway station locations in EJ areas (East Gaither, West Gaither, and Metropolitan Grove) that would provide improved access to transit opportunities. The potential for increased housing costs does exist for historically minority and low-income neighborhoods located in or near the City of Frederick due to improved access to the corridor that would be provided by the highway improvements. Another potential concern is determining the extent to which low-income populations would be able to benefit from the use of ETLs based upon the pricing index and trip diversions to the general purpose lanes.

*Visual Conditions*

Alternatives 6A/B and 7A/B would increase the visual presence of the highway with additional lanes, retaining walls (recommended for minimizing potential displacements), and noise barriers (for noise reduction). Alternatives 6A/B and 7A/B are expected to have similar visual effects although Alternative 7A/B would add two lanes in each direction between MD 121 and north of MD 80 in Frederick County and Alternative 6A/B would add one lane in each direction. Noise barriers would provide a measure of visual screening as well as noise abatement where they are installed.

The transitway alignment will have moderate visual effects since it would travel mostly at ground level. The potential transit station sites would have the greatest degree of visual effect on EJ areas. These station sites will use land within several new and emerging communities. The East and West Gaither Stations and the Metropolitan Grove Station would add new visual elements and public activity centers within EJ areas. The visual effects may be somewhat offset by designing stations to be visually compatible with the surrounding neighborhoods.

*Noise*

Potential noise effects from the project would occur throughout the corridor. Noise barriers would reduce adverse noise effects from the project. Noise barriers will be provided where feasible and reasonable. After mitigation, no further noise impacts are anticipated on EJ areas from the highway or transitway alignments or associated facilities. Therefore, the extent of the projected impacts on the block groups identified within EJ areas would not be considered a disproportionately high and adverse impact under the EJ guidelines.

*Traffic and Transportation*

All residents in the corridor, including those who live in EJ areas, can expect to benefit from the project through improved transportation access and a modest reduction in traffic on local roads with the provision of more public transportation to the area. Alternatives 6A/B and 7A/B include improvements to existing interchanges, construction of new interchanges, and construction of access roads in several locations that will improve traffic, transportation access, and safety. The access improvements would benefit all travelers within the corridor including those who live and work in EJ areas. Four of ten interchange improvements are located in EJ areas, but no new interchanges are located in EJ areas.

Both residents and employees in the corridor can expect transportation benefits from the project. With the transitway, area residents will have improved access throughout the corridor and the surrounding area can expect a modest reduction in traffic on local roads as a result of more public transportation in the area.

**Economic Environment**

*Existing Economic Environment*

The I-270/US 15 Corridor is one of Maryland’s premier economic regions. Frederick and Montgomery Counties combined account for 21.8 percent of all jobs in Maryland. Many of those jobs are located directly along the I-270/US 15 and CCT alignments, with the highest concentrations in central Montgomery County. Workers in Montgomery and Frederick Counties actually take home over a quarter (25.4 percent) of the state’s total wages.



Montgomery County’s economy is led by three industries that make up over half of the county’s total employment: professional and business services; education and health services; and trade, transportation and utility-related industries. Montgomery County’s portion of the I-270/US 15 corridor is the favored location for many high-tech businesses, especially biotechnology and information technology firms. Montgomery County leads the state in the number of high-tech firms.

The Frederick County economy is led by four key industries that also account for over half of the county’s employment: education and health services; trade, transportation and utilities; professional and business services; and construction. Frederick County is developing two technology parks, Mount Saint Mary’s Bio Park and Jefferson Technology Park, and already houses several major bio-tech employers including the US Army Medical Research Institute of Infectious Diseases at Fort Detrick.

In the I-270/US 15 Corridor, most major employment centers in the corridor are located in the southern end in Montgomery County, within the Corridor Cities of Rockville, Gaithersburg, Germantown and Clarksburg. The City of Frederick is the major location of employment in Frederick County.

Economic Impacts

Overall, the build alternatives will create relatively small positive economic development effects when compared with the large amount of economic growth forecasted to occur in the project area, with or without the project. Nonetheless, the congestion relief provided will provide a positive impact with increased accessibility of people, goods, and markets, thus helping the area maintain its economic edge. Accessibility is measured in three areas: ease of getting to employment destinations; ease in getting to shopping destinations; and, from a business perspective, ease in attracting potential customers.

Consumers would benefit from the project with better access to shopping destinations. Retail businesses could see a benefit from a broader customer base that can reach stores in a shorter time. Workers would benefit in two ways. In the shorter term, workers would benefit from the number of jobs that construction of the project would provide. Both Alternative 6A/B and 7A/B would provide a similar amount of jobs, with the construction of the

light rail requiring about 400 more jobs than building the bus rapid transit line. A more permanent benefit to workers is increased accessibility to jobs in a shorter time and/or within a wider area.

Local government property tax revenues could be influenced in three ways by the project: (1) through direct takings of property off the tax rolls to construct the improvements, (2) the stimulation of new development which would increase property tax revenues, and (3) general property value increases associated with the accessibility improvements. Both highway options are expected to increase the value of, and development potential for, open lands along the corridor, especially in northern Montgomery County and central and southern Frederick County. The transit options also have the potential to increase transit oriented development opportunities.

Cultural Resources

Cultural resources and the impacts of the project on these resources are described in greater detail in **Chapter IV.D**. Ten historic properties were identified within the Area of Potential Effects (APE) of Alternatives 6A/B and 7A/B. Impacts to historic properties include the physical taking of land, noise, and visual changes that would result in adverse effects.

Of the ten historic properties within the APE, Alternatives 6A/B and 7A/B would have an adverse effect on eight, listed below with their Maryland Inventory of Historic Properties (MIHP) numbers:

- England/Crown Farm (M:20-17)
- Belward Farm (M:20-21)
- Atomic Energy Commission Building (M:19-41)
- Monocacy National Battlefield (F-3-42)
- Schifferstadt (F-3-47)
- Rose Hill Manor (F-3-126)
- Spring Bank (F-3-22)
- Birely-Roelkey Farm (F-3-134)

Alternatives 6A/B and 7A/B would have no adverse effect on the remaining two properties, Worman House (F-3-198) and Harmony Grove Union Chapel (F-3-197).

No additional archeological investigations were done since the DEIS. Additional archeological investigations

will be necessary once an alternative is selected. Owners of the properties have been notified and have been invited to consult with SHA, MTA and the MD SHPO about the effects of the project and potential minimization and mitigation efforts. A Memorandum of Agreement (MOA) is being coordinated with the MD SHPO and the owners of affected properties that will identify the measures to be taken to address the adverse effects. The MOA will also include stipulations to identify and treat any unanticipated archeological discoveries if they are found.

Section 4(f) Summary

The Section 4(f) evaluation was performed in accordance with the US Department of Transportation Act of 1966, 49 USC 303(c), as implemented through 23 CFR 774 by the FHWA. In summary, the evaluation, detailed in **Chapter IV.E**, identified 13 publicly-owned public parks or recreation areas and seven historic properties that would be affected by Alternatives 6A/B and 7A/B. The methodology to evaluate Section 4(f) resources included the following steps: identification of resources via coordination with the agency with jurisdiction over the resource; identification of potential uses of Section 4(f) properties caused by Alternatives 6A/B and 7A/B (including property acquisition, impacts to activities, impacts such as noise and visual effects); exploring potential avoidance alternatives; and evaluating planning to minimize harm. Quantitative efforts included measurements of property acreage impacts, predicting future noise levels, and projecting future air quality in the project corridor. Qualitative efforts included an assessment of visual impacts, including those from mitigation efforts. The project team intends to pursue a *de minimis* finding for nine public parks that are impacted by the alternatives. Throughout the Section 4(f) process, SHA and MTA have consulted with the Maryland State Historic Preservation Officer (SHPO), owners of the historic resources, and parks officials in matters of potential impacts including potential avoidance and minimization efforts.

Section 4(f) Resources

The following publicly-owned public parks and recreation areas would be impacted by Alternatives

6A/B and 7A/B: Malcolm King Park, Morris Park, Seneca Creek State Park, Middlebrook Hill Neighborhood Conservation Area, North Germantown Greenway, Black Hill Regional Park, Little Bennett Regional Park, Urbana Lake Fish Management Area, Urbana Elementary School Recreation Area, Urbana Community Park, Monocacy National Battlefield, Baker Park and Rose Hill Manor Park. Historic properties impacted by Alternatives 6A/B and 7A/B include England/Crown Farm, Belward Farm, the Atomic Energy Commission Building, Monocacy National Battlefield National Historic Landmark, Schifferstadt, Rose Hill Manor, and Birely-Roelkey Farm.

Section 4(f) Uses

Alternatives 6A/B and 7A/B would require right-of-way from each Section 4(f) resource listed above for the construction of additional lanes, ramps and intersections along the I-270/US 15 corridor. Most of these impacts would require the acquisition of a narrow strip of land from the resource adjacent to the existing highway. The uses and impacts are shown on Table **IV-18** and **Table IV-19** in **Chapter IV.E**.

Avoidance Analysis

While the No-Build Alternative and the TSM/TDM Alternative (discussed in the 2002 DEIS) would be considered as avoidance alternatives, they do not meet the project’s purpose and need. Due to the magnitude and scope of the project, an avoidance alternative that eliminates all of the impacts is not prudent or feasible.

The project team intends to pursue a *de minimis* finding for nine of the public parks (not including Urbana Elementary School Recreation Area, Monocacy National Battlefield, Baker Park and Rose Hill Manor Park) impacted by the alternatives.

Least Overall Harm Analysis

Avoidance options, including retaining walls, centerline shifts and design changes, were evaluated for each individual resource. Measures to minimize harm to each of the resources impacted include the use of 2:1 slopes in the conceptual highway design as well as the potential for retaining walls, minimized shoulder widths, and design modifications. These minimization



MONOCACY NATIONAL BATTLEFIELD

The Monocacy National Battlefield is a National Historic Landmark (NHL) that is under the jurisdiction of the National Park Service (NPS). The battlefield is located in Frederick County, Maryland, approximately three miles south of the center of the City of Frederick. Although this area of the county is developing rapidly, the national battlefield is remarkably free of intrusive elements. Only I-270 intrudes on the historic landscape, essentially bisecting the battlefield (see aerial view, page S-11). The CSX Railroad also extends through the national battlefield, paralleling the Monocacy River and Bush Creek. Historic Urbana Pike (MD 355) runs north-south through the eastern part of the battlefield, and provides the main access for visitors to the battlefield. Urbana Pike provides much of the access to the important features within the battlefield; however, the heavy traffic volumes of commercial and commuter traffic and narrow shoulders encroach upon the visitor experience.

The national battlefield’s boundaries encompass most of the lands upon which the Battle of Monocacy was fought. Six farmsteads that existed during the battle still exist within the national battlefield. Surrounding agricultural fields retain the feel of the Civil War era landscape, with few changes to field configurations and fence rows. Forested areas include Brooks Hill and areas along the Monocacy River and Bush Creek, which provide a buffer from development outside the boundaries.

**“The Battle That Saved Washington”**

In the summer of 1864, Confederate Lieutenant General Jubal Early launched a campaign down the Shenandoah Valley with a corps of approximately 15,000 troops. The campaign was a last attempt to carry the war to the north and to relieve some pressure from General Robert E. Lee in the south. Early’s ultimate objective for the campaign was to march down the Valley, to swing to the east through Frederick, then to attack and possibly capture Washington, D.C. from the north.

Agents of the B&O Railroad learned of the Confederate movement and alerted John Garrett, president of the B&O Railroad. Garrett informed



Best Farm

Union Major General Lew Wallace, in command of the Middle Department at Baltimore, who hastily organized a force of 6,550 men at Monocacy Junction in an attempt to delay Early’s advance on the capital. On the morning of July 9, 1864, Confederate and Union forces engaged each other along the banks of the Monocacy River.

Although the battle was a military victory for the Confederates and their only victory in the north, it was also a defeat. The time spent fighting the battle cost the Confederates a crucial day of marching and provided the Union time to send reinforcements to Washington, D.C. General Early’s army returned to Virginia and the remainder of the war was fought on southern soil. Because of General Wallace’s valiant delaying action, the Battle of Monocacy became known as “The Battle That Saved Washington, D.C.”

**Battlefield Amenities and Activities**

Today, visitors begin their journey through this hallowed ground at the Visitor Center. The original on-site visitor contact station was replaced in 2007 by a new visitor center near the northern boundary of the battlefield off of MD 355. The interactive and multimedia exhibits located in the Visitor Center include numerous vignettes encompassing events before, during, and after the Battle of Monocacy as well as fiber optic maps, historical artifacts and interpretive displays of the battle. A bookstore offers



Worthington House

literature which provides in-depth discussions of the Civil War and the Battle of Monocacy, as well as other interpretive items for people of all ages and interest levels.

A self-guided, auto tour provides visitors an overview of key locations where the Battle of Monocacy was fought. The route follows the public roadway system and totals approximately 6 miles round-trip. Parking is provided at the Best Farm, Worthington Farm, Thomas Farm, and at Gambrill Mill.

There are several hiking trails within Monocacy National Battlefield. The accessible Gambrill Mill trail provides scenic views of the Monocacy River as well as interpretive waysides. The Thomas Farm features two walking trails: the Thomas Farm Loop trail, which traces the key events in the Battle of Monocacy; and the Middle Ford Ferry Loop trail, which explores the early settlement of the Monocacy Region and provides peaceful views of the Monocacy River. Two walking trails are featured at the Worthington Farm: The Ford Loop, which interprets key events in the Battle of Monocacy, and the Brooks Hill Loop trail, a nature walk.

The Monocacy River flows for a length of two miles within the battlefield. This portion of the Monocacy is popular for kayaking and canoeing.

Nature enthusiasts can spot several species of birds and a variety of plant species within the battlefield, including the Short’s Rockcress, Harbinger of Spring, and Dwarf Larkspur. Throughout the park there are a number of trees which are referred to as “witness” trees, or trees that were present at the time of the battle.

**Monocacy National Battlefield Draft General Management Plan (GMP)**

The Monocacy National Battlefield GMP has been developed by the NPS to serve as the foundation for making decisions about managing the battlefield’s natural and cultural resources, enhancing the visitor experience, and for preparing more specific resource plans. The NPS presented the draft plan to the public on September 2, 2008 with the public comment period open until June 26, 2009. Completion of the final plan is anticipated by Fall 2009. The GMP can be viewed in its entirety at <http://parkplanning.nps.gov/mono>.

The GMP included several alternatives which represented different approaches to managing the national battlefield. A “no-action” and three “action” alternatives were presented, with the no-action alternative serving as the baseline for comparison with the action alternatives. The preferred alternative incorporates several of the advantageous features of the other build alternatives. These features include:

- Visitors would use their own vehicles to drive around the battlefield.
- A deck would be installed over I-270, connecting the two sides of the battlefield.
- All historic structures would be preserved and maintained. The Worthington House would be rehabilitated and the first floor would be open with exhibits. Parking near the Worthington House would be relocated closer to the building. Outbuildings on the Best Farm would remain open. Administration offices would move into the Thomas House. The stone tenant house on the Thomas Farm would contain exhibits and restrooms; parking would be available near a non-historic outbuilding on the farm.



MONOCACY NATIONAL BATTLEFIELD (CONT)

- The entrance to the 14th New Jersey Monument would be shifted south to allow better sight distances. A landscaped commemorative area would be created at the site of the Pennsylvania and Vermont monuments as a location for new memorials.
- The Gambrill Mill trail would be extended to allow visitors to walk to the railroad junction, sites of Union entrenchments, and General Wallace's headquarters.

Summary of Impacts to Monocacy National Battlefield

The proposed I-270 widening alternatives will impact the battlefield to varying degrees. Potential impacts include right-of-way acquisition (about 12 to 14 acres) and impacts to forested lands, prime farmland soils, wetlands that parallel I-270, and the historic viewshed of the battlefield. Vehicle noise is also a primary concern within the battlefield, as several of the amenities are in close proximity to I-270. I-270 bridges the Monocacy River, which is a state-designated Wild and Scenic river, within the battlefield. For detailed descriptions of how the proposed alternatives impact Monocacy National Battlefield, please refer to Chapter IV of this EA (Environmental Resources and Consequences) and Chapter III of the DEIS (Affected Environment and Environmental Consequences).

Potential Mitigation for Battlefield Impacts

The SHA and NPS have discussed potential minimization of the roadway impacts and mitigation opportunities that could support the GMP preferred alternative. It is important to note that coordination is ongoing, and will continue throughout the planning, design, and ultimately the construction stages of the project. Minimization efforts incorporated to date have included shifting all roadway widening to the west (to areas that have previously been disturbed) and reducing the typical section of the proposed roadway through the battlefield.

Ideas for mitigation that have been discussed include:

- Construction of a deck over I-270 to connect the two sides of the battlefield.
- Bridges along I-270 within the battlefield would have aesthetic treatments, coordinated with NPS.
- Using underground stormwater management facilities within the I-270 roadway footprint to minimize the right-of-way impacts.
- Using noise-reducing pavement within the battlefield.
- Constructing noise abatement measures, provided they do not mar the battlefield viewshed.
- Installing signing. Signs include directional signs to lead visitors to the park; interpretive signing along MD 355, MD 85, the Byron Overlook, and possibly MD 144 to note sites of historical significance; and "monument"-style signing on I-270 at the park boundaries.
- Landscaping, including the removal of invasive species.

Next Steps

The I-270 Multi-Modal team will continue coordination with the NPS and the other consulting parties, including the Civil War Preservation Trust, American Battlefield Protection Program, Advisory Council on Historic Preservation, Maryland State Historic Preservation Office (MD SHPO), Frederick County Department of Planning, The Heart of the Civil War State Heritage Area, and Journey Through Hallowed Ground National Heritage Area concerning the minimization and mitigation of the impacts of the selected alternative. Minimization strategies for the roadway and conceptual mitigation will be finalized and a Memorandum of Agreement will be developed between the FHWA, MD SHPO, and the NPS. SHA will be included as a signatory and other groups that have responsibilities under the MOA will also be invited to participate as appropriate.



Source: SHA, Aerial Flown 2005





efforts will be evaluated further during the design phase of the project. For one resource, the Monocacy National Battlefield, a National Historic Landmark, the centerline of the roadway is proposed to be shifted to the west to avoid impacts on the east (northbound) side of I-270, thus eliminating impacts to the east side resource areas of importance.

Additional measures to minimize harm to each resource will be considered in consultation with the jurisdictional officers. These could include:

- Providing replacement land of equal or greater natural resource and economic value as per Program Open Space and Section 6(f) funding requirements
- Implementing erosion and sediment control measures
- Use of SWM Best Management Practices
- Replacement wetlands
- Vegetation mitigation and replanting historic landscape buffers
- Landscaping with viewshed considerations
- Relocation of facilities or installation of new facilities within resource boundaries.

The least overall harm analysis will be completed prior to a recommendation for a preferred alternative. Consultation and coordination with jurisdictional officers, including the National Park Service, will continue through the design phase of the project, in an effort to avoid, minimize or mitigate the impacts to identified Section 4(f) properties.

Natural Resources

The potential impacts of Alternatives 6A/B and 7A/B on natural resources within the project’s limits of disturbance are detailed in **Chapter IV.F**. The impacts of the two build alternatives would be identical, as they have the same physical footprint. The No-Build Alternative will have no impacts on the natural environment. **Table S-5** summarizes the natural resources impacts of Alternatives 6A/B and 7A/B.

Geology, Topography and Soils

Alternatives 6A/B and 7A/B are not expected to impact geology. There are no major impacts to topography, as most of the roadway is proposed to be at-grade; some minor differences would occur at interchange overpasses and underpasses, for roadway grading and fill placement, and to construct bridge abutments.

Alternatives 6A/B and 7A/B would potentially impact 720.7 acres of prime farmland soils and 483.5 acres of soils of statewide importance.

Groundwater

Alternatives 6A/B and 7A/B could potentially impact shallow groundwater levels in areas of new pavement. Impacts to deep groundwater aquifers are not anticipated. Alternatives 6A/B and 7A/B will cross the Piedmont Sole Source Aquifer (SSA). Potential impacts to the SSA could occur in areas where new pavement is proposed, directly impacting recharge and stream flow zones. The amount of impervious surface added would be minimal and the same for both alternatives.

Surface Water

Alternative 1 (No-Build Alternative) will not have an impact on major stream systems within the project corridor. Alternatives 6A/B and 7A/B will have the same impacts to the major stream systems within the project study area, as both alternatives have the same physical footprint. Alternatives 6A/B and 7A/B will directly impact 24,204 linear feet of streams (perennial and intermittent): 20,198 linear feet for highway and 4,006 for transitway. Two of the five O&M facilities, the Metropolitan Grove Road site (486 linear feet) and the PEPCO Transmission Lines site (660 linear feet), would impact streams (see **Table S-6**). The highway improvements would cross 77 tributaries of various sizes, while the transit component would cross 16 streams. Direct impacts of the highway component on stream channels would be caused by extensions of existing bridge and culvert crossings. Transitway impacts would be associated with new culvert or bridge crossings.

Table S-5: Summary of Natural Resources Impacts

RESOURCE	ALTERNATIVE 6A/B AND 7A/B		
	HIGHWAY	TRANSITWAY <sup>1</sup>	TOTAL
Prime Farmland Soils (acres)	642	78.7	720.7
Soils of Statewide Importance (acres)	460	23.5	483.5
Streams (linear feet)	20,198	4,006	24,204
Ephemeral Streams/Channels	10,812	1,646	12,458
Wetlands (acres)	13.0	2.6 <sup>2</sup>	15.6
100-year Floodplain (acres)	25.6	2.8	28.4
Forests (acres)	268.6	27.2	295.8

<sup>1</sup> Does not include O&M facilities

<sup>2</sup> Wetlands impacts include all of the O&M facilities; only one would be chosen.

Table S-6: Summary of Natural Resources Impacts of the O&M Facilities

SITE LOCATION	WETLANDS IMPACTS (ACRES)	STREAMS IMPACTS (LINEAR FEET)	FOREST IMPACTS (ACRES)
Shady Grove Area - Redland Road	0	0	0
Shady Grove Area - Crabbs Branch Way	0.04*	0	0
Metropolitan Grove Area – PEPCO/Game Preserve Road Site	0	660	18.7
Metropolitan Grove Area – Police Vehicle Impound Lot	0	486 (LRT) 328 (BRT)	10.2 (LRT) 7.8 (BRT)
COMSAT Area – Observation Drive	3.3 plus 2.1*	0	0.8

\* Represents the area for wetland buffer.



Complete avoidance of impacts to surface waters is not possible due to the number of these systems in the project area and their orientation perpendicular to the proposed alternatives. However, impacts have been avoided or minimized wherever possible through the realignment of the transitway and the shift of lane additions to one side of the existing highway or another. Investigations of further avoidance and minimization measures are ongoing and will continue throughout all phases of engineering design for the project.

### Surface Water Quality

The Code of Maryland Regulations (COMAR) sets forth water quality criteria specific to designated uses (Title 26, §08.02.02 and §08.02.08 (2006)). All stream segments within the project area are designated as Use Class I-P (water contact recreation and the protections of aquatic life and public water supplies), Use Class III-P (natural trout waters and the protection of public water supplies), or Use Class IV-P (recreational trout waters and the protection of public water supplies).

The No-Build Alternative will have no effect on the surface water quality of the study area watersheds. Both Alternatives 6A/B and 7A/B have the potential to affect the surface water quality in the project area. Direct impacts to streams could include sediment releases and vegetation removal. Sediment releases can damage fish and macroinvertebrate habitat or cause fish mortality, and tree removal reduces shade to the stream causing in-stream temperatures to rise, which can affect sensitive fish species.

Total avoidance of impacts to surface water quality is not possible because of the large area of watershed affected by the project and the numerous stream systems that cross the project corridor. Impacts can be minimized and mitigated with the construction of Stormwater Management (SWM) facilities to handle increased stormwater runoff that may occur with the construction of additional highway surfaces. During construction activities, the use of sediment and erosion control measures will be employed to prevent surface water contamination.

### Scenic and Wild Rivers

The Monocacy River, which flows perpendicular to the I-270/US 15 Corridor south of Frederick in Frederick County, is designated as a State Scenic River based on the criteria established within the Scenic and Wild Rivers Act of 1968. Alternatives 6A/B and 7A/B will directly impact the Monocacy River (approximately 75 linear feet by 8 feet wide) for a new bridge pier to accommodate the roadway widening.

Prior to the implementation of a build alternative, project plans would be provided to the Maryland Department of Natural Resources (MDNR) for review in compliance with the Maryland Scenic and Wild Rivers Act. The MDNR will review how these direct impacts may diminish the character of the Monocacy River. Coordination with MDNR regarding potential impacts to the Monocacy River is ongoing and will continue through all phases of the project.

### Floodplains

The No-Build Alternative will not impact 100-year floodplains within the project study area. The highway component of Alternatives 6A/B and 7A/B will impact approximately 25.6 acres of the 100-year floodplain along area streams, while the transitway component will impact 2.8 acres. The majority of floodplain encroachments will be from perpendicular crossings by the highway build alternatives and the transitway alignment.

Efforts to minimize and avoid impacts to 100-year floodplains will continue throughout the planning and engineering process. Techniques that will be investigated to further minimize or avoid impacts may include alignment shifts to ensure the narrowest possible crossing and bridging of floodplains to further reduce encroachment and allow for unrestricted passage of floodwaters. Hydrologic and hydraulic studies will be conducted to determine the appropriate bridge or culvert opening sizes that will not appreciably raise flood levels. All construction occurring within the Federal Emergency Management Agency (FEMA) designated 100-year floodplain must comply with FEMA approved local floodplain construction requirements.

### Waters of the US including Wetlands

The No-Build Alternative will have no effect on Waters of the US, including wetlands, within the I-270/US 15 Corridor.

The highway component of Alternatives 6A/B and 7A/B would impact approximately 13 acres of wetlands, while the transitway component could potentially affect 2.6 acres. The impacts of Alternatives 6A/B and 7A/B are identical. Palustrine emergent (PEM) wetlands are the wetland class that would be most affected by the highway build alternatives followed by forested wetlands (PFO), respectively. The transitway alignment would most impact emergent wetlands followed by scrub-shrub wetlands (PSS). Many of the wetlands impacted by the build alternatives are connected to larger wetland systems that provide a diverse and interdependent collection of ecological functions. These systems include Great Seneca Creek, Little Seneca Creek, Monocacy River, Rock Creek, Carroll Creek, and Tuscarora Creek.

Impacts have been avoided or minimized wherever possible through the initial placement of alignments to avoid unnecessary crossings. Investigations of further avoidance and minimization measures are on-going and will continue throughout all phases of engineering design for the project. Short-term construction impacts will be minimized through strict adherence to SHA erosion and sediment control procedures and Maryland Department of the Environment (MDE) SWM regulations.

Mitigation planning for unavoidable wetland and waterway impacts of the project will continue to adhere to the guidelines of the Maryland Compensatory Mitigation Guidance (1994) and Section 404 requirements. Potential mitigation sites were described in the 2002 DEIS and no further investigations were completed for this document.

### Terrestrial Vegetation and Wildlife

Vegetation communities and wildlife are the same as identified in the DEIS. The main communities identified include agricultural land, developed land and old field habitat. Forest habitat occurs as small strips between developments or farm fields and larger tracts along stream valleys, within wetlands, on steep-sloped areas, and within parklands. Several large forest tracts occur within parklands.

The No-Build Alternative would not impact wildlife or terrestrial habitat. Alternatives 6A/B and 7A/B would impact a total of 295.8 acres of forest (268.6 for the highway component and 27.2 acres for the transitway component). Forest impacts would also occur with three of the five O&M sites being evaluated (see **Table S-6**). Impacts would occur during clearing for roadway/transitway construction and conversion of habitat to pavement. Mitigation for forest impacts would be undertaken in accordance with Maryland's *Forest Conservation Act* and *Reforestation Law*.

### Aquatic Habitat and Species

Aquatic habitat assessment is generally completed by state and local agencies alongside benthic macroinvertebrate and fish community field assessments. Since 2002, new aquatic community assessment locations were sampled by the MDNR, Maryland Biological Stream Survey (MBSS), the Montgomery County Department of Environmental Protection (MCDEP), and the Frederick County Department of Public Works. MCDEP assessments provided mixed results ranging from "good" to "fair."

New aquatic habitat assessments were conducted by SHA during the fish and macroinvertebrate community sampling periods in summer 2006 and spring 2007. The resulting Physical Habitat Index scores showed scores in the partially to severely degraded range.

Benthic macroinvertebrate community quality varied throughout the project study area. MCDEP and MBSS produced variable ratings for fish communities in the streams that cross the project area.

The No-Build Alternative will not have an effect on the aquatic biota of the study area watersheds. The build alternatives have the potential to affect aquatic biota. The primary direct impacts to aquatic biota from Alternatives 6A/B and 7A/B would be mortality of aquatic organisms during construction of stream crossings from heavy equipment, and loss of natural habitat from placement of culvert pipes and other in-stream structures.

Complete avoidance of impacts to aquatic habitat and species is not possible with a build alternative due to the quantity of streams and stream crossings within the project area. Impacts have been avoided as much as

possible by the placement of the alternatives to avoid additional unnecessary crossings and linear crossings of aquatic habitats. Investigations of further avoidance and minimization measures are on-going and will continue throughout all phases of engineering design and construction for the project.

### Rare, Threatened and Endangered Species

Coordination with the US Fish and Wildlife Service (USFWS) did not indicate the presence of any federally-listed rare, threatened or endangered (RTE) species within the project area. Alternatives 6A/B and 7A/B could potentially adversely affect two state-listed threatened fish species, the pearl dace and the comely shiner, as both species were identified in waters affected by the project during field studies. Impacts could include mortality and loss of habitat. To minimize these impacts and protect these and other species, MDE prohibits in-stream work in Use III streams from October 1 through April 30 and may extend this prohibition to July 31.

### Hazardous Materials Sites

An Initial Site Assessment (ISA) for the project area was conducted in 1999 for the 2002 DEIS. The ISA did not identify any sites where construction of the proposed transportation alternatives would be expected to encounter severe soil or groundwater contamination. Modest levels of soil or groundwater contamination were documented at five facilities and suspected at four facilities within the project area. These facilities include six leaking underground storage tank (LUST) sites under MDE regulation and three No Further Remedial Action Planned (NFRAP) sites regulated by the US Environmental Protection Agency (EPA). An additional nine potential sites of concern (PSC) were identified during field studies that were not identified in the ISA as contaminant release sites. These locations of potential contamination were identified based on their proximity to the proposed alignments and observation of site operations (heavy equipment storage and maintenance, underground storage tank replacement, monitoring well installation or electrical power distribution). These sites could be considered as potential sources of

environmental contamination during construction of either Alternative 6A/B or 7A/B.

Additional site investigations are recommended following the identification of a build alternative and prior to right-of-way acquisition and negotiation.

### Air Quality

The air quality analysis used data from the travel demand model to estimate the total emissions produced under the No-Build Alternative and under Alternatives 6A/B and 7A/B. The regional impact of Alternatives 6A/B and 7A/B was predicted to cause changes to regional pollutant [carbon monoxide (CO), nitrogen oxide (NO<sub>x</sub>), particulate matter smaller than 10 microns (PM<sub>10</sub>), particulate matter smaller than 2.5 microns (PM<sub>2.5</sub>), and volatile organic compounds (VOC)] levels ranging from an increase of 1.1 percent to a reduction of 0.3 percent versus the No-Build Alternative. Based on these differences, Alternatives 6A/B and 7A/B are predicted to have a minimal effect on regional pollutant levels. Refer to *Table IV-28* in **Chapter IV.H**.

Project-level analyses were performed for two specified pollutants: particle matter with a size of 2.5 microns or smaller (PM<sub>2.5</sub>) and carbon monoxide (CO). The qualitative analysis for PM<sub>2.5</sub> determined that Alternatives 6A/B and 7A/B meet all project level PM<sub>2.5</sub> conformity requirements, and that the project will not cause or contribute to a new violation of the National Ambient Air Quality Standards (NAAQS) for PM<sub>2.5</sub>. Quantitative analysis of CO predicted that there would be no violations of the NAAQS for CO.

Alternatives 6A/B and 7A/B were considered in accordance with EPA's requirements for evaluating mobile source air toxics (MSATs), a group of pollutants that can cause health problems from increased exposure. Construction of a build alternative may result in increased exposure to MSAT emissions in certain locations. As of the current level of knowledge about these pollutants and the concentrations and duration of exposures that can cause health problems are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

### Noise and Vibration

Noise impact analysis determined that Alternatives 6A/B and 7A/B would have noise impacts on adjacent noise sensitive areas. Vibration analysis determined that Alternatives 6A/B and 7A/B would not have any vibration impacts. Details of the noise and vibration analyses are presented in **Chapter IV.I**.

Existing noise levels were recorded at 55 sites adjacent to the proposed highway improvements. Future noise levels were predicted based upon projected traffic conditions. Alternative 6 would impact 40 of the 55 highway sites studied, including 27 residential areas and 13 non-residential areas including parks, one hotel, a cemetery and two museums. Of these, six sites (four residential, one park, and one cemetery) were projected to suffer substantial noise level increases of 10 decibels (dBA) or more. Alternative 7A/B was found to impact 39 of the 55 highway sites studied, including 26 residential areas and the same 13 non-residential areas impacted by Alternative 6A/B. Of these 39 impacted sites, seven sites (five residential, one park, and one cemetery) were projected to suffer substantial noise level increases of 10 dBA or more.

Mitigation of noise impacts was evaluated for each of the impacted sites in accordance with SHA noise abatement policy guidelines. Twenty-six potential noise barrier locations were evaluated for feasibility and reasonableness. Twenty locations satisfied SHA criteria for abatement for Alternative 6A/B, and 19 areas satisfied SHA criteria for Alternative 7A/B. Decisions regarding the construction of noise barriers will be made during final engineering.

Future noise levels were predicted at 25 locations near the proposed transitway alignment. Noise impacts from LRT operations with or without horn noise are projected to occur at four residential properties within the transit corridor. Horn noise contributions were determined to not cause any new noise impacts. The four impacted properties were determined to be within the FTA "Moderate Impact" classification. No noise impacts were identified with the BRT alternative. Noise levels from activities at the O&M facilities (i.e. moving

trains and other sources) would generally be acceptable during the daytime hours at most of the residential sites near the potential O&M facilities sites. However, these noise levels would be unacceptable at night; therefore, it is recommended that noise-producing O&M activities be limited to daytime hours.

### Visual and Aesthetic Quality

The project will introduce new elements into the visual landscape such as an electrified transit railway (LRT), additional buses, additional highway lanes, structures (bridges and highway ramps), park and ride lots, noise walls and transit stations. Where possible, these elements will be designed to be compatible and integrated with the environmental context of their locations. As discussed in the 2002 DEIS and **Chapter IV.J**, the extent of the visual impacts of these new elements will depend on the existing visual character of each specific area, as well as surrounding land uses.

Mostly, the highway improvements are proposed in areas where there is already significant existing infrastructure, and neither highway component will result in major changes in the visual character of the landscape. The main changes would be a somewhat wider road with additional lanes and additional ramps to accommodate ETL direct access. There will be little overall difference between the visual impact of Alternative 6A/B and Alternative 7A/B.

Noise walls can act to shield visual impacts in areas where they are recommended to reduce noise impacts. Noise walls will be designed and constructed in consultation with the local communities to ensure that they are compatible with the context of the surrounding built and natural environment.

In general, the BRT alternative will have less of a visual impact than the LRT alternative. Most elements introduced by the transit improvements will be the same for BRT and LRT, including stations, park and ride lots, and elevated sections of transitway. The LRT option would introduce additional elements to the landscape such as an overhead catenary system and other aerial structures along the transitway.





Indirect and Cumulative Effects Analysis

A Secondary and Cumulative Effects Analysis (SCEA) was completed for the 2002 DEIS for Alternatives 3A/B, 4A/B and 5A/B/C. That analysis included the use of a panel of land use experts to identify whether a build alternative for the corridor would cause changes in land use that would be substantially different from the changes anticipated in the master plans associated with the I-270 and US 15 project corridor.

A current ICE analysis has been completed to review the 2002 SCEA as well as to analyze the indirect and cumulative effects of Alternatives 6A/B and 7A/B, and to identify if the conclusions reached during the 2002 analysis have changed because of new urban development in the project area environment, new build alternatives proposed for the project, or changes in ICE analysis guidance. Details of this analysis are in **Chapter IV.L**.

Both the 2002 analysis and the current (2008-2009) analysis indicate that there are no substantial changes since the 2002 DEIS in the land use or projected land use, based on area master plans. In the intervening years, projects have continued to be approved and constructed within the designated development areas. The conclusions reached by the analysis, including the projections of the Land Use Expert Panel, were that “select locations in the region would experience future development beyond that planned for Montgomery and Frederick counties” and that “this additional development would occur regardless of the alternate, including the No-Build.” The current analysis did not find any indications that this conclusion has changed, and the conclusions of the former analysis remain valid.

The current ICE analysis also relied on the land use projections of the Panel, which found that in select locations the region would experience future development beyond that planned for by Montgomery and Frederick Counties. The Panel determined that this additional development would occur regardless of the alternative, including the No-Build. Therefore, resources in these locations may be under unanticipated stress.

Energy

The energy analysis, detailed in **Chapter IV.M**, evaluates two components of energy use: the energy required to construct the project, and the change in energy usage relating to daily vehicular travel in the region.

The LRT alternative uses less energy for construction. The energy consumption involved in construction of the transitway would be higher for BRT than for LRT due to the fact that the elevated roadway segments needed for BRT require more energy to construct than elevated trackway. The energy needed to construct the BRT guideway is estimated at 298 billion British Thermal Units (BTUs), compared to 208 billion for the LRT guideway.

Transportation energy usage for the study area and region shows that each of the build alternatives has less than a one percent effect on regional transportation energy consumption, making it almost immeasurable. Highway Alternative 7A/B will encourage more vehicle miles traveled, resulting in higher energy usage than Alternative 6A/B. Of the transit alternatives, BRT appears to use less energy in its daily operations (443 million BTUs) than LRT, which would use 459 million BTUs daily to operate. Alternative 6B is therefore predicted to have the smallest relative increase in transportation energy of all the build alternatives.

Construction of this project would require review and approval for the permits listed in **Table S-7**.

Table S-7: Permits Required

PERMIT REQUIRED	PERMITTING AGENCY
Section 401 Water Quality Certificate	MDE
Section 404 Wetland Permit	USACE/MDE
Non-tidal Wetland and Waterways Permit	MDE
Stormwater Management Plan Approval	MDE
Sediment and Erosion Control Plan Approval	MDE
Forest Conservation Plan	Maryland Department of Natural Resources
National Pollution Discharge Elimination System (NPDES) permit for point discharges	MDE
Archeological Resources Protection Act Permit	NPS

Goals and Objectives/Measures of Effectiveness

Measures of Effectiveness (MOE) were established over the course of the study for purposes of evaluating the proposed alternatives. The alternatives can be evaluated based on the MOE. The goals and measures of effectiveness are presented in **Chapter I** and evaluated in **Chapter VI**, and are summarized in the following text.

Goal 1: Support Orderly Economic Growth

**Objective:** Support the orderly economic development of the I-270/US 15 Corridor consistent with the existing local government land use plans and Maryland’s Economic Growth, Resource Protection and Planning Act.

*Measures of Effectiveness:*

- Consistency of project with development policies in local area master plans
- Consistency of project with State Smart Growth policies

Goal 2: Enhance Mobility

**Objective:** Provide enhanced traveler mobility throughout the I-270/US 15 Corridor by: optimizing travel choices by destination, mode and route; minimizing delay; and improving the safety and overall efficiency of the transportation system.

*Measures of Effectiveness:*

- Transit ridership, including new transit trips
- Annual user benefit hours (travel time savings)
- Highway level of service
- Increased travel choices
- Improved transit accessibility

Goal 3: Improve Goods Movement

**Objective:** Facilitate the movement of goods within and through the I-270/US 15 Corridor and improve the delivery of services in support of the regional and local economies.

*Measures of Effectiveness:*

- Highway level of service

Goal 4: Preserve the Environment

**Objective:** Deliver transportation services in a manner that preserves, protects, and enhances the quality of life and social, cultural and natural environment in the I-270/US 15 Corridor.

*Measures of Effectiveness:*

- Support regional air quality conformity goals
- Minimize impacts of transportation system to natural and community environment

Goal 5: Optimize Public Investment

**Objective:** Provide a transportation system in the I-270/US 15 Corridor that makes optimal use of the existing transportation infrastructure while making cost effective investments in facilities and services that support other project goals.

*Measures of Effectiveness:*

- Capital costs
- Operating and maintenance costs
- Transit cost-effectiveness index





Summary of Costs/Financial Analysis

Details of the analyses summarized herein can be found in Chapter V.

Capital Cost Estimates

A summary of the capital cost estimates for Alternatives 6A/B and 7A/B is shown in Table S-8. The costs for the build alternatives range between approximately \$4.3 billion (Alternatives 6B and 7B) and approximately \$4.7 billion (Alternatives 6A and 7A). The capital cost estimates represent total project costs and include project planning, engineering design, right-of-way, vehicles (transit), and construction.

Operations and Maintenance (O&M) Costs

Highway

Highway O&M costs are relatively low; they include routine repairs and periodic road resurfacing. Following construction, these costs will be incorporated into the overall repair cycle budget for the I-270 and US 15 roadways.

Transit

O&M costs cover labor and material costs to operate the transit service and maintain the vehicles and guideway. O&M costs fluctuate based on the level of transit service provided, e.g., frequency of service, number of vehicles needed to maintain that service. A detailed discussion of the methodology used to develop O&M costs is included in Chapter V. A summary of the estimated annual O&M costs is provided in Table S-9.

Funding Strategy

Highway funding is anticipated to be through a combination of Federal-aid highway funds and Maryland Transportation Trust Fund (TTF) funds. The collection of tolls on the ETLs will help to provide funds as well. Additional funding options may be evaluated as needed.

Funding for the transit component will be achieved through a variety of sources. Maryland’s TTF will provide funding for capital and operating costs. FTA’s New Starts Program is anticipated to provide a portion

of the capital funding cost. Additional sources of revenue may include funds from Montgomery County; the probable source will be local property tax revenues. Montgomery County is also anticipated to contribute portions of the right-of-way needed for the CCT. Private sector funding options will also be considered. The construction and maintenance of the hiker-biker trail component of the project is not anticipated to be funded as a part of the total package.

Financial Analysis

The estimated cost of the highway alternatives (\$3,879 million) is the same for both Alternatives 6A/B and 7A/B, as they have the same physical footprint and the same quantity of pavement. The capital cost of the LRT Alternative, \$777.5 million, is greater than for the BRT Alternative (\$449.9 million). LRT would be about five percent more expensive in terms of annual operating costs, at \$28.1 million, than BRT (\$26.9 million). While LRT operation along the CCT alignment is about 50 percent more expensive than BRT operation, LRT provides substantial savings in the feeder bus service. Costs and financial feasibility of the alternatives are discussed in Chapter V.

Cost Effectiveness

A cost effectiveness analysis of Alternatives 6A/B and 7A/B provides a comparative index for FTA to use in determining the level of New Starts funding that would be provided for the proposed transit component. The detailed discussion is included in Chapter VI. The analysis is based upon the comparative effectiveness of the alternatives in meeting the goals and objectives established for the project. The project’s goals and objectives as listed previously in this summary, and the ability of each build alternative to meet the goals is summarized in the following text.

Effectiveness in Meeting Project Goals

Goal 1 – The ability to support orderly economic growth should not be a differentiating factor among the build alternatives because all of the build alternatives include improvements to the same highway corridor, include the addition of ETLs, and propose transit improvements on the same alignment.

Table S-8: Summary of Capital Cost Estimates by Alternative

COST COMPONENT	ALTERNATIVE 6-TSM	ALTERNATIVE 6A OR 7A	ALTERNATIVE 6B OR 7B
Highway			
Project Planning	\$17.37	\$17.37	\$17.37
Engineering Design	\$476.03	\$476.03	\$476.03
Right-of-Way	\$378.65	\$378.65	\$378.65
Construction	\$3,006.85	\$3,006.85	\$3,006.85
Subtotal – Highway	\$3,878.90	\$3,878.90	\$3,878.90
Transit			
Construction	\$49.22	\$455.82	\$281.93
Right-of-Way	\$7.38	\$35.00	\$35.00
Vehicles	\$11.36	\$112.20	\$25.66
Other*	\$18.90	\$174.51	\$107.33
Subtotal – Transit	\$86.86	\$777.53	\$449.92
TOTAL COST	\$3,965.76	\$4,656.43	\$4,328.82

\* Includes professional services and contingency.  
Cost estimates in \$million 2007  
Costs represent a “snapshot” in time for comparison. Project costs are subject to change based on world and local financial markets.

Goal 2 – The ability of the highway component to enhance mobility shows that between Alternatives 6A/B and 7A/B, Alternative 7A/B provides the most mobility improvement to the general purpose lanes, with 30 fewer miles of LOS F conditions during peak hours than the No-Build, versus Alternative 6A/B, with 13 fewer miles of LOS F conditions.

For the transitway, the LRT Alternatives 6A and 7A are projected to have a greater number of daily boardings, 30,000, than the BRT Alternatives 6B (26,000) and 7B (27,000). Conversely, the BRT alternatives would attract more new transit riders (averaging 16,950 on BRT versus 16,350 on LRT). The BRT Alternatives 6B and 7B would provide a greater increase in daily user benefit hours (13,700 and 13,800 hours respectively) over the No-Build Alternative than the LRT Alternatives 6A and 7A (13,200 and 13,300 hours, respectively). Differences can be attributed to the potential for BRT to continue express service on feeder buses onto the guideway and providing a “one-seat”

trip, while LRT feeder bus passengers would have to transfer to the LRT to use the guideway.

Goal 3 – The build alternatives would improve goods movement along the I-270/US 15 corridor by improving LOS during peak travel hours on the general-purpose lanes and providing a faster, more free-flowing traffic stream on the ETLs. Freight and other commercial carriers would be able to use the ETLs and the general-purpose lanes depending on how valuable the time savings is to a particular trip. Alternative 7A/B, which provides two ETLs between MD 121 and north of MD 80, would provide a slight advantage over Alternative 6A/B. Refer to Chapter VI.

Goal 4 – In order to preserve the environment, the build alternatives will be engineered to avoid impacts to the environment wherever possible throughout the length of the improvements. As Chapter IV indicates, some impacts are not able to be avoided. Minimization strategies have been and will continue to be evaluated



throughout final design. For those impacts that are unable to be avoided, mitigation strategies will lessen the impact to the environment. There is no difference in the physical impacts between Alternatives 6A/B and 7A/B. Differences among the build alternatives in visual, audible, and air quality impacts are minor. A comparison of specific impacts is provided in **Chapter IV** and summarized in **Chapter VI**.

**Goal 5** – Each of the build alternatives would optimize public investment by increasing the efficient use of the transportation system by reducing travel times and encouraging the use of transit. Because the BRT Alternatives 6B and 7B have a lower capital cost (see **Table S-10**), they rank much higher in terms of value provided per dollar than the LRT Alternatives 6A and 7A. It is unclear whether Alternative 7A/B would provide the better public investment return because of the additional ETL between MD 121 and north of MD 80. By adding the second ETL, toll revenues may be decreased (to be dynamically determined based on general purpose lane congestion), thereby requiring a higher public capital cost share to construct the same improvements.

In addition to mobility benefits from the public investment, development benefits are predicted to be realized in enhanced valuation of property resulting from greater mobility and accessibility as well as proximity to transit stations.

Effectiveness Analysis

Estimated capital costs are summarized in **Table S-8**. Annual transit O&M costs, summarized in **Table S-9**, include daily operating expenses (fuel, operators and other personnel) as well as guideway maintenance. Cost effectiveness is calculated for FTA using their specified methodology, as discussed in **Chapter VI**. The results (**Table S-10**) show that the two BRT Alternatives 6B and 7B, with ratings of \$18.50 and \$18.25 per hour of user benefit, respectively, meet the FTA threshold with a “medium” cost-effectiveness rating, and would be acceptable to proceed into preliminary engineering, where more detailed studies would be conducted on the alignments and costs. Both of the LRT alternatives have “low” cost-effectiveness ratings.

Related Projects in the Study Area

Related projects in the study area are listed in **Table S-11** and in **Chapter I, Table I-1**.

In addition to these projects, the West Side Mobility Study, a joint effort between SHA and the Virginia Department of Transportation (VDOT), examined the engineering and highway operational effects of adding a managed lane system to I-270 and I-495 from the I-270/I-370 interchange south and west to north of the Dulles Toll Road via the I-270 West Spur and over the American Legion Bridge. The purpose of the study is to develop a range of alternative and operating scenarios to provide additional capacity and a managed lanes network between I-370, the Intercounty Connector (ICC), the I-270/US 15 Multi-Modal Corridor Study, and the VDOT High Occupancy Toll (HOT) lanes project.

A notable change since the 2002 DEIS on related projects is the status of the Intercounty Connector (ICC). The 2002 DEIS does not cite the existence of the ICC since it was not an active project with the Maryland Department of Transportation nor was it included in the MWCOC CLRP. However, in 2003 MDOT and the U.S. Department of Transportation designated the ICC project a priority project and it was added to the region’s CLRP. The ICC is a limited access highway connecting US 1 in Prince George’s County and I-370 in Montgomery County. In 2006, after completion of a DEIS and FEIS, the Record of Decision was signed for the locally preferred alternative (a fully-tolled, limited access highway). The highway is currently under construction with the westernmost segment (Contract A) slated to open in late 2010 and the entire highway to be completed by late 2011 or early 2012.

Issues to be Resolved and Next Steps

As a supplement to the 2002 DEIS, this AA/EA serves to identify additional alternatives that will be considered in a Final Environmental Impact Statement (FEIS). Additional issues will be addressed in the next steps in the planning process. These include:

- Operation of a transit facility

Table S-9: Annual O&M Costs by Transit Alternative

ALTERNATIVE	LIGHT RAIL TRANSIT	BUS RAPID TRANSIT	BACKGROUND BUS	TOTAL
Alternative 6-TSM		\$ 5,842,400	\$8,950,950	\$14,793,350
Alternative 6A, 7A	\$26,985,700		\$1,143,400	\$28,129,100
Alternative 6B, 7B		\$17,907,850	\$8,950,950	\$26,858,800

Note: All costs are shown relative to the No-Build.

Table S-10: Cost-Effectiveness (costs in 2007 dollars)

	ALTERNATIVE 6-TSM	ALTERNATIVE 6A	ALTERNATIVE 6B	ALTERNATIVE 7A	ALTERNATIVE 7B
Capital Costs	\$86,860,000	\$777,530,000	\$449,920,000	\$777,530,000	\$449,920,000
Equivalent Annual Capital Costs*	\$7,440,700	\$62,202,400	\$36,443,500	\$62,202,400	\$36,443,500
Equivalent Annual Capital Costs above TSM		\$54,761,700	\$29,002,800	\$54,761,700	\$29,002,800
Net Change in Operating Costs	\$14,793,000	\$28,129,000	\$26,859,000	\$28,129,000	\$26,859,000
Operating Costs above TSM		\$13,336,000	\$12,066,000	\$13,336,000	\$12,066,000
Daily User Benefit Hours	6,300	13,200	13,700	13,300	13,800
Benefit Hours above TSM		6,900	7,400	7,000	7,500
Annual Benefit Hours		2,070,000	2,220,000	2,100,000	2,250,000
Cost-Effectiveness Index		\$32.90	\$18.50	\$32.43	\$18.25

\* These are the one-time capital costs expressed as an annualized stream of payments over 20 years, much as the value of a mortgage can be expressed in terms of annual payments.

Costs represent a “snapshot” in time for comparison. Project costs are subject to change based on world and local financial markets and will be reevaluated for the Final Environmental Impact Statement.

- Coordination with local agencies and developers on specific site locations for stations, parking facilities, noise walls and maintenance facilities
  - Determination and design of stormwater management facilities
  - Continuing coordination to minimize harm for Section 4(f) uses
  - Continuing coordination with the MD SHPO and owners of affected resources to complete an MOA for adverse effects of the project
  - Continuing minimization of residential and business displacements
- Continuing minimization of natural resources impacts
  - Continuing Section 106 coordination
  - Land Use/Smart Growth

Next steps in the planning process include a hearing to gain input from the public on Alternatives 6A/B and 7A/B, continuing coordination and consultation with the resource and regulatory agencies and the public, and completion of a compensatory mitigation package for all impacts. The publication of a FEIS and issuance of a Record of Decision (ROD) would complete the planning process.





Table S-11: Programmed Transportation Improvements in the Study Area

LOCATION	DESCRIPTION	PROJECTED COMPLETION DATE
Highway Upgrade, Reconstruction, Extension and Widening Projects		
US 15 at Monocacy Boulevard	Construct a new interchange at US 15 and Monocacy Boulevard	2010
I-70 from Mt. Phillip Road to MD 144 (Baltimore National Pike)	Extend MD 475 (East St) from South Street to proposed Monocacy Boulevard, including storm water management ponds and new urban diamond interchange with I-70 and ramps to Walser Drive	Under construction
	Replace I-70 bridge over Reichs Ford Road & reconstruct ramps, widen from MD 144 to west of Monocacy Boulevard; reconstruct Monocacy Boulevard interchange	2015
	Widen to 6 lanes, New Design Road to Mt. Phillip Road	2015
I-270 Interchange at Watkins Mill Road	Widen and extend Watkins Mill Road from 4-6 lanes; construct interchange; add 2-lane collector-distributor roads NB & SB on I-270	2020
I-270 at MD 121	Reconstruct interchange of I-270 and MD 121	2010
MD 27 from MD 355 to Snowden Farm Parkway (A-305)	Widen to 6 lanes from MD 355 to Midcounty Highway.; widen to 4 lanes from Midcounty Highway. to Snowden Farm Parkway	2010
Midcounty Hwy. (M-83) from Montgomery Village Avenue to MD 27	Construct 4 to 6 lane roadway	2020
MD 85 from English Muffin Way to north of Grove Road	Upgrade MD 85 to multi-lane divided highway	2020
MD 117 from Great Seneca Park (s.c.) [Seneca Creek State Park] to I-270	Improve roadway and reconstruct intersections to provide capacity and improve operations. Includes sidewalks where appropriate & multi-use path on south side.	Engineering to be completed by 2010
MD 118 from MD 355 to M-83 [Midcounty Highway]/ Watkins Mill Road	Extend MD 118 as a 6-lane divided highway (includes bicycle/pedestrian accommodation)	2020
MD 355/MD 80 Urbana Bypass, east of I-270 north & south of Urbana	Construct to 4 lanes relocated east of I-270, from north of MD 80 to south of MD 80, including intersection (2 separate projects)	2010
Father Hurley Boulevard from Wisteria Road to MD 118 Relocated	Construct final link of Father Hurley Boulevard as a 4- or 6-lane roadway (includes bridge over CSX railroad; includes bicycle/pedestrian accommodation)	2010
Middlebrook Road Extended from MD 355 to M-83	Study to construct 6 lanes	2010
I-270: replace bridge over Doctor Perry Road	Existing bridge is deteriorating	2010
Dorsey Mill Road from Century Boulevard to Observation Drive	Connect Dorsey Mill Road between Century Boulevard and Observation Drive via an overpass of I-270	Not available

Table S-11: Programmed Transportation Improvements in the Study Area (continued)

LOCATION	DESCRIPTION	PROJECTED COMPLETION DATE
Observation Drive extended north to Stringtown Road	Planning study to extend Observation Drive as a 4-lane divided roadway from south of Little Seneca Creek to Clarksburg Town Center	Not available
Intercounty Connector (ICC)	Construct toll freeway between I-270 and I-95/US1; engineering, right-of-way acquisition and construction under way	2012
Transit Extensions and Parking Expansion Projects		
Olney Transit Center	Construction of transit center in Olney	2015
Montgomery County Randolph Road bus enhancements	Bus Rapid Transit from MD 355 to US 29	2010
Clarksburg Transit Center	Construct Transit Center	2015
Paul S. Sarbanes Transit Center Silver Spring	Transit center at Silver Spring to include Metrorail/MARC station, local and intercity bus, and a taxi queue area. Incorporates connections for a possible future Bi-County Transitway (Purple Line) and/or hiker/biker trail. Phase I Construction is complete.	2010
Purple Line	Study of 16-mile transitway between New Carrollton and Bethesda Metrorail stations, connecting the Metrorail Red, Green and Orange lines to key destinations in Prince George's and Montgomery Counties.	Planning to be completed in 2010

Sources: MWCOG 2007 CLRP, Montgomery County's Ten-Year Transportation Plan September 2007, and MDOT 2008-2013 CTP.





Environmental Assessment Form

The Environmental Assessment Form (EAF) is a requirement of the Maryland Environmental Policy Act and Maryland Department of Transportation Order 11.01.06.02. Its use is in keeping with the provisions of 1500.4 (k) and 1506.2 and 1506.6 of the Council of Environmental Quality Regulations, effective July 31, 1979, which recommend that duplication of Federal, State and Local procedures be integrated into a single process.

The checklist identifies specific areas of the natural and socioeconomic environment that have been considered while preparing this environmental assessment. The reviewer can refer to the appropriate section of the document, as indicated in the “Comment” column of the form, for a description of specific characteristics of the resource and the potential impacts, beneficial or adverse, that the action may incur. The “No” column indicates that during the scoping and early coordination processes, a specific area of the environment was not identified to be within the project area or would not be impacted by the proposed action.

Environmental Assessment Form

		YES	NO	COMMENTS ATTACHED
Land Use Considerations				
1.	Will the action be within the 100-year floodplain?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
2.	Will the action require a permit for construction or alteration within the 50-year floodplain?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
3.	Will the action require a permit for dredging, filling, draining, or alteration of a wetland?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
4.	Will the action require a permit for the construction or operation of facilities for solid waste disposal including dredge and excavation spoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5.	Will the action occur on slopes exceeding 15%?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
6.	Will the action require a grading plan or a sediment control permit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
7.	Will the action require a mining permit for deep or surface mining?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
8.	Will the action require a permit for drilling a gas or oil well?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
9.	Will the action require a permit for airport construction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
10.	Will the action require a permit for the crossing of the Potomac River by conduits, cables or other like devices?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
11.	Will the action affect the use of a public recreation area, park, forest, wildlife management area, scenic river or wildland?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Sections IV.B and IV.E

Environmental Assessment Form

		YES	NO	COMMENTS ATTACHED
12.	Will the action affect the use of any natural or man-made features that are unique to the County, State, or Nation?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.E
13.	Will the action affect the use of an archeological or historical site or structure?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.E
Water Use Considerations				
14.	Will the action require a permit for the change of the course, current, or cross-section of a stream or other body of water?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
15.	Will the action require the construction, alteration, or removal of a dam, reservoir, or waterway obstruction?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
16.	Will the action change the overland flow of stormwater or the absorption capacity of the ground?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
17.	Will the action require a permit for the drilling of a water well?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
18.	Will the action require a permit for water appropriation?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
19.	Will the action require a permit for the construction and operation of facilities for treatment or distribution of water?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
20.	Will the project require a permit for the construction and operation of facilities for sewage treatment and/or land disposal of liquid waste derivatives?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
21.	Will the action result in any discharge into surface or sub-surface water?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
22.	If so, will the discharge affect ambient water quality limits or require a discharge permit?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
Air Use Considerations				
23.	Will the action result in any discharge into the air?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.H
24.	If so, will the discharge affect ambient air quality limits or produce a disagreeable odor?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
25.	Will the action generate additional noise which differs in character or level from present conditions?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.I
26.	Will the action preclude future use of related air space?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
27.	Will the action generate any radiological, electrical, magnetic, or light influences?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	





Environmental Assessment Form

		YES	NO	COMMENTS ATTACHED
Plants and Animals				
28.	Will the action cause the disturbance, reduction, or loss of any rare, unique or valuable plant or animal?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.F
29.	Will the action result in the significant reduction or loss of any fish or wildlife habitats?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
30.	Will the action require a permit for the use of pesticides, herbicides or other biological, chemical, or radiological control agents?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Socioeconomic				
31.	Will the action result in a preemption or division of properties or impair their economic use?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.B
32.	Will the action cause relocation of activities or structures, or result in a change in the population density of distribution?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.B
33.	Will the action alter land values?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.C
34.	Will the action affect traffic flow and volume?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section III
35.	Will the action affect the production, extraction, harvest or potential use of a scarce or economically important resource?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
36.	Will the action require a license to construct a sawmill or other plant for the manufacture of forest products?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
37.	Is the action in accord with federal, state, regional and local comprehensive or functional plans including zoning?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.A
38.	Will the action affect the employment opportunities for persons in the area?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.C
39.	Will the action affect the ability of the area to attract new sources of tax revenue?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.C
40.	Will the action discourage present sources of tax revenue from remaining in the area, or affirmatively encourage them to relocate elsewhere?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.C
41.	Will the action affect the ability of the area to attract tourism?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

Environmental Assessment Form

		YES	NO	COMMENTS ATTACHED
Other Considerations				
42.	Could the action endanger the public health, safety, or welfare?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
43.	Could the action be eliminated without deleterious affects to the public health, safety, welfare, or the natural environment?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
44.	Will the action be of statewide significance?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
45.	Are there any other plans or actions (Federal, State, County or private) that, in conjunction with the subject action, could result in a cumulative or synergistic impact on the public health, safety, welfare, or environment?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Section IV.L
46.	Will the action require additional power generation or transmission capacity?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Conclusion				
47.	This agency will develop a complete environmental effects report on the proposed action.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	See Document





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Acronyms

ACRONYMS	
AA	Alternatives Analysis
ACHP	Advisory Council on Historic Preservation
ADT	Average Daily Traffic
AEC	Atomic Energy Commission
APE	Area of Potential Effects
AQTR	Air Quality Technical Report
ARMA	Air and Radiation Management Administration
ASTM	American Society for Testing and Materials
BIBI	Benthic Index of Biotic Integrity
BLS	US Bureau of Labor Statistics
BMPs	Best Management Practices
BRT	Bus Rapid Transit
BTU	British Thermal Unit
CAA	Clean Air Act
CAAA	Clean Air Act and Amendments of 1990
CCT	Corridor Cities Transitway
CD Lanes	Collector-Distributor Lanes
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CLRP	Constrained Long Range Transportation Plan
CO	Carbon Monoxide
COMAR	Code of Maryland Regulations
COMSAT	Communications Satellite, Inc.

ACRONYMS	
CTP	(Maryland) Consolidated Transportation Program
dBA	Decibels, A-weighted (representing the range of human hearing)
DC	District of Columbia; Washington, DC
DEIS	Draft Environmental Impact Statement
DOE	Department of Energy
DPW&T	(Montgomery County) Department of Public Works and Transportation
EA	Environmental Assessment
EPA	US Environmental Protection Agency
ETL(s) <sup>SM</sup>	Express Toll Lane(s) <sup>SM</sup>
EJ	Environmental Justice
FACT	Frederick Area Committee on Transportation
FCDPW	Frederick County Department of Public Works
FCLF	Frederick County Landmarks Foundation
FCIR	Farmland Conversion Impact Rating
FCA	Forest Conservation Act
FCP	Forest Conservation Plan
FEIS	Final Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FFGA	Full Funding Grant Agreement
FHWA	Federal Highway Administration
FIBI	Fish Index of Biotic Integrity
FIR	Flood Insurance Rating
FPPA	Farmland Protection Policy Act

ACRONYMS	
FSD	Forest Stand Delineation
FTA	Federal Transit Administration
GP	General Purpose [Lanes]
GSA	Government Services Administration
HAZMAT	Hazardous Materials
H&H	Hydrologic and Hydraulic
HCS	Highway Capacity Software
HOT	High Occupancy/Toll
HOV	High Occupancy Vehicle
IBI	Index of Biotic Integrity
ICC	Inter County Connector
ICE	Indirect and Cumulative Effects
ISA	Initial Site Assessment
ITS	Intelligent Transportation Systems
LI	Light Industrial
LRT	Light Rail Transit
LOS	Level of Service
LPA	Locally Preferred Alternative
LUST	Leaking Underground Storage Tank
LWC	Land and Water Conservation
MBSS	Maryland Biological Stream Survey
MCDEP	Montgomery County Department of Environmental Protection
MDNR	Maryland Department of Natural Resources
MDE	Maryland Department of the Environment

ACRONYMS	
MDOT	Maryland Department of Transportation
MDP	Maryland Department of Planning
MD SHPO	Maryland State Historic Preservation Officer
MDTA	Maryland Transportation Authority
MHT	Maryland Historical Trust
MIHP	Maryland Inventory of Historic Places
M-NCPPC	Maryland-National Capital Park and Planning Commission
MOA	Memorandum of Agreement
MOE	Measures of Effectiveness
MOS	Minimal Operating Segment
MPO	Metropolitan Planning Organization
mS/cm	milliSiemens per centimeter (a measure of electrical resistance - Siemen is an inverse ohm)
MSAT(s)	Mobile Source Air Toxics
MTA	Maryland Transit Administration
MWAQC	Metropolitan Washington Air Quality Committee
MWCOG	Metropolitan Washington Council of Governments
MXD	Mixed-use development zoning
NAAQS	National Ambient Air Quality Standards
NAC	Neighborhood Advisory Council (Frederick City)
NAC	Noise Abatement Criteria (Noise Analysis)
NCA	Neighborhood Conservation Area
NCPC	National Capital Planning Commission
NEPA	National Environmental Policy Act (1969)
NETR	Natural Environmental Technical Report



ACRONYMS	
NFRAP	No Further Remedial Action Planned
NIST	National Institute of Standards & Technology
NHPA	National Historic Preservation Act of 1966
NMF	National Marine Fisheries
NO <sub>x</sub>	Nitrogen Oxides
NPDES	National Pollution Discharge & Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRE	National Register Eligible
NRHP; NR	National Register of Historic Places
NSA	Noise Sensitive Area
NVTR	Noise and Vibration Technical Report
O <sub>3</sub>	Ozone
O&M	Operations and Maintenance
ORI	Office/Research/Industrial
P3	Public-Private Partnership
Panel	Land Use Expert Panel
PE	Preliminary Engineering
PEM	Palustrine Emergent Wetlands
PFA	Priority Funding Area
PFO	Forested Wetlands
PHI	Physical Habitat Index
PM	Particulate Matter
PM <sub>2.5</sub>	Particulate Matter less than 2.5 microns in size

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PM <sub>10</sub>	Particulate Matter less than 10 microns in size
POS	Program Open Space
PSC	Potential Sites of Concern
PSS	Scrub-Shrub Wetlands
ROD	Record of Decision
ROW	Right-of-Way
RTE	Rare, Threatened and Endangered
SAFETEA-LU	Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users
SCEA	Secondary and Cumulative Effects Analysis
SETR	Socio-Economic Technical Report
SHA	Maryland State Highway Administration
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SSA	Sole Source Aquifer
STIP	State Transportation Improvement Program
SVP	Stream Valley Park
SWM	Stormwater Management
TDM	Transportation Demand Management
TIP	Transportation Improvement Program
TMD	[North Bethesda] Transportation Management District
TMP	Transportation Management Plan
TNM	Traffic Noise Model
TOD	Transit-Oriented Development
TPB	Transportation Planning Board

ACRONYMS	
TSM	Transportation System Management
TTF	Maryland Transportation Trust Fund
US	United States
USACE	US Army Corps of Engineers
USDOT	US Department of Transportation
USFWS	US Fish and Wildlife Service
VdB	Vibration Decibels
VDEQ	Virginia Department of Environmental Quality
VDOT	Virginia Department of Transportation
VHT	Vehicle Hours Traveled
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
WHD	Wildlife and Heritage Division
WIM	Weigh In Motion
WMATA	Washington Metropolitan Area Transit Authority
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VOC	Volatile Organic Compounds
WHD	Wildlife and Heritage Division
WIM	Weigh In Motion
WMATA	Washington Metropolitan Area Transit Authority
WSSC	Wetlands of Special State Concern
WSTC	Washington Suburban Transit Commission



# Chapter I – Purpose and Need







# Purpose and Need

## Introduction

The Maryland State Highway Administration (SHA) and Maryland Transit Administration (MTA) are developing a multi-modal transportation project along the I-270/US 15 corridor in Montgomery and Frederick counties, Maryland. The project study area extends from I-270 at Shady Grove Road in Montgomery County to the US 15/Biggs Ford Road intersection in Frederick County. The study area includes a transit corridor, the Corridor Cities Transitway (CCT), extending from the existing Shady Grove Metrorail Station to the Communications Satellite, Inc.(COMSTAT) area facility located just south of Clarksburg in Montgomery County. The project study area is shown in **Figure I-1**. This document is intended to present the two new project alternatives that were developed since the June 2002 Draft Environmental Impact Statement (DEIS) was published for public review and comment.

## Purpose and Need

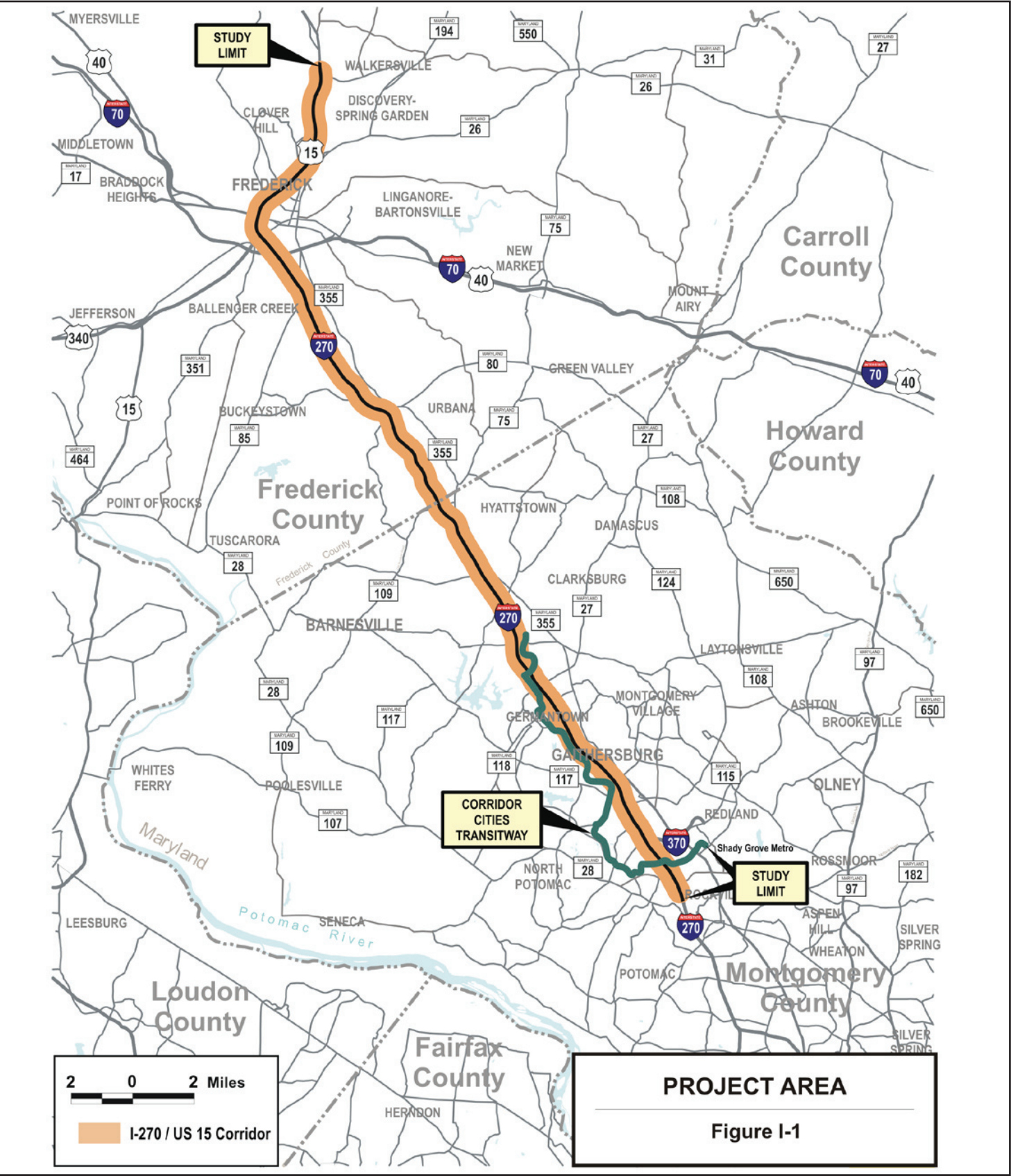
### Project Purpose

The purpose of the I-270/US 15 Multi-Modal Corridor Study is to investigate options to address congestion and improve safety conditions along the I-270/US 15 Corridor. The I-270/US 15 Corridor provides an essential connection between the Washington, DC metropolitan area and both central and western Maryland and is an important corridor for carrying local and long distance trips, both within and beyond the corridor.

### Project Need

The need for the project results from the mobility challenges from the growing traffic congestion in the I-270 and US 15 corridors. Population and employment growth in Montgomery and Frederick Counties is expected to cause peak period traffic congestion along the I-270/US 15 Corridor to worsen. The lack of alternate, high-speed routes within the corridor also contributes to congestion on I-270 and US 15. Transit provides an alternative, but express and local bus service travels in mixed traffic in the study area and is subject to the same congestion as other vehicles. Rail services such as MARC and Metrorail provide fast, reliable travel options for some residents of the study area. However, access to Metrorail is hampered by the same

Figure I-1: Project Study Area



traffic congestion as other traffic and parking at some of the existing MARC and Metrorail stations is filled to capacity before the morning peak travel hours are over. Refer to the 2002 DEIS for a more complete description of the capacity and safety problems of alternate routes including MD 355 in Section I.D, pages I-6 to I-16.

## Project Goals

In order to more effectively evaluate the proposed transportation strategies and alternatives, the project team developed five goals for this project. These goals were developed in consultation with the I-270/US 15 Multi-Modal Corridor Study Focus Group, approximately 20 individuals representing business and community interests in the project area selected to review and offer input for the many transportation improvement options and evaluation measures. (For more information on the focus group and goal development process, refer to the 2002 DEIS, Section VII, pages VII-4 to VII-7.)

The five project goals are:

### Support Orderly Economic Growth

Support the orderly economic development of the I-270/US 15 Corridor consistent with the local government land use plans and Maryland's Economic Growth, Resource Protection and Planning Act.

### Enhance Mobility

Provide enhanced traveler mobility throughout the I-270/US 15 Corridor by: optimizing travel choices by destination, mode and route; minimizing delay; and improving the safety and overall efficiency of the transportation system.

### Improve Goods Movement

Facilitate the movement of goods within and through the I-270/US 15 Corridor and improve the delivery of services in support of the regional and local economies.

### Preserve and Protect the Environment

Deliver transportation services in a manner that preserves, protects and enhances the quality of life and social, cultural and natural environment in the I-270/US 15 Corridor.





**Optimize Public Investment**

Provide a transportation system in the I-270/US 15 Corridor that makes optimal use of existing transportation infrastructure while making cost effective investments in facilities and services that support other project goals.

**AA/EA Document Purpose**

This document presents the information developed for the Alternatives Analysis/Environmental Assessment (AA/EA) to support local decision-making for highway and transit investments in the I-270/US 15 Corridor, as well as the description and potential impacts of Alternatives 6A/B and 7A/B. The study conforms to the requirements of the National Environmental Policy Act of 1969 (NEPA) and considers the impacts to the natural and built environment. NEPA requires the systematic review of environmental and transportation facility changes with respect to:

- The environmental impacts of the proposed project
- Adverse impacts that cannot be avoided
- Alternatives to the proposed project
- Consequences of the proposed project

In addition, NEPA requires consultation with federal agencies and public participation in the transportation planning process. The EA document provides data to address the above statements with respect to environmental resources within the corridor.

As an Alternatives Analysis (AA), this document was prepared for the Federal Transit Administration (FTA) in accordance with Congressional direction. The requirements of the AA process allow for an objective, efficient, and fully informed evaluation and rating of the transit projects seeking funding under the Federal New Starts process. The AA requirements are specifically included in **Chapters I, III and V** of this document.

**Project Background and History**

Chapter I.C (pages I-2 to I-3) of the 2002 DEIS provides a complete project history. The following paragraphs provide a summary of the project history and describe relevant project events that occurred after the DEIS and the June 2002 Public Hearings.

The I-270/US 15 Corridor has been the subject of multimodal transportation studies since 1970, conducted by local and state agencies to address transportation needs in the corridor. The DEIS represents Stage II of a three-stage project planning process by the SHA and MTA and is a transition between prior concept planning and Stage III – the Final Environmental Impact Statement (FEIS). This AA/EA also represents Stage II of the planning process and examines two new alternatives and their impacts.

The I-270/US 15 Multi-Modal Corridor Study DEIS was approved by the Federal Highway Administration (FHWA), FTA, SHA and MTA in May 2002, and published for review and comment. The DEIS contained five alternatives for evaluation: No-Build, TSM/TDM and three build alternatives (3A/B, 4A/B and 5A/B/C).

Following publication of the DEIS, public hearings were held on June 25, 2002 in Montgomery County and on June 27, 2002 in Frederick County to receive comments on the document. The public comment period ended on August 16, 2002 with receipt of 125 written comments, 13 private oral testimony recordings and three group petitions for consideration.

In response to some of the comments received, the project team met with members of the Fox Chapel community on August 25, 2003 and presented a minimization option that would avoid potential displacements in this community.

In the fall of 2003, the Maryland Department of Transportation (MDOT) directed SHA to consider Express Toll Lanes<sup>SM</sup> (ETLs<sup>SM</sup>) as an alternative for the I-270/US 15 Corridor. Public Workshops were held on June 29 and 30, 2004 to introduce the ETL concept for the project. This AA/EA document presents the two new ETL alternatives, 6A/B and 7A/B, for public review and comment.

Written comments were received from 22 citizens following the June 2004 ETL workshops. An almost equal number of comments focused on transit and highway concerns, and comments were fairly equally divided in favor of and against the ETL concept. Many individuals verbally expressed concern regarding equity issues and the perception that ETLs constitute double taxation. Some also expressed concern regarding the slow progression of the study, stating that congestion continues to get worse and solutions still seem far off in the future. Alternative suggestions to improve congestion included improvement of the Metrorail system and adding a new rail system northward to Frederick. Fox Chapel and Brighton West Community residents expressed noise and property depreciation concerns due to the close proximity of the alternatives to their communities.

In addition to adding the ETL concept to the project, MTA performed a thorough evaluation of operation and maintenance (O&M) facility sites throughout 2006, including those identified in the 2002 DEIS and others identified later. Five sites are currently under review and described in this document.

**Corridor Setting**

The I-270/US 15 Multi-Modal Corridor Study principally runs from Montgomery County at the Shady Grove Metrorail station approximately where I-270 meets I-370 in Rockville, Maryland northwest to Frederick County at US 15 and Biggs Ford Road. Included in the study is the CCT, which is entirely contained within Montgomery County between the Shady Grove Metrorail station and the COMSAT facility located just south of Clarksburg, providing stations at several activity centers along the way.

**Planning Context**

In the 1970s, Montgomery County developed plans for a transitway corridor, the CCT extending northward from the then-planned terminal of the Washington Metropolitan Area Transit Authority’s (WMATA) Metrorail Red Line at Shady Grove. The CCT alignment was incorporated into the county’s master plan as well as the individual sector plans, to

ensure that land is reserved for the corridor as part of any development and redevelopment planned and constructed in the study area. Over the years, this corridor reservation has enabled the county to keep much of the corridor available either through direct donation by developers or by developers providing easements or assurances that nothing will be built within the planned right-of-way.

Recently, developers of properties such as the Crown Farm in Gaithersburg and the Casey Property near the Metropolitan Grove station have begun to design their plans to take advantage of the potential for future transit service along the CCT corridor, planning commercial structures near proposed station areas and increasing residential densities in proximity to the stations.

In general, the master plan context for improvements in the I-270/US 15 Corridor is based on the Frederick and Montgomery county master planning documents, including:

- Montgomery County’s *On Wedges and Corridors* master plan and the area plans within which the I-270 Corridor lies: the City of Gaithersburg, Gaithersburg Vicinity, Germantown, Clarksburg and Hyattstown, and
- Frederick City and County comprehensive plans and the area plans for the Frederick and Urbana Regions.

Three area master plans are currently being updated: the *Gaithersburg Vicinity-Shady Grove Master Plan Amendment*, the *Gaithersburg Vicinity Master Plan Amendment* and the *Germantown Master Plan*. Area master plans that have been updated since the 2002 DEIS include:

- The *Frederick Region Plan* (update adopted July 2002) supports the selection of any of the DEIS alternatives (including highway widening and interchange improvements) and identifies additional recommendations for intersections on US 15 and the preservation of a transitway alignment into downtown Frederick.
- The *Urbana Region Plan* (update adopted June 2004) recommends widening I-270 to six or eight lanes, construction of a new interchange on I-270 at

MD 75, improvements to the MD 80 interchange and consideration of an additional interchange at Park Mills Road. The plan also supports the preservation of a transitway alignment in Frederick County.

- The *City of Frederick Comprehensive Plan* (update adopted September 2004) recommends the implementation of the improvements in the I-270/US 15 Multi-Modal Corridor Study DEIS, supports direct transit service to Montgomery County and Washington, DC employment centers as well as reverse commute service, and identifies an extension of MARC service through the City.
- The *Shady Grove Sector Plan* was last updated July 2004 and is in the process of being updated again. This plan covers the area around the Shady Grove Metrorail station, and only the southern-most half-mile of the CCT is within this area. The plan includes the proposed CCT, and one of the plan's transportation objectives is to "incorporate into the Metro Rail station to provide convenience for transit riders." More specifically, the plan supports a cross-platform connection between the CCT and Metrorail, the location of the CCT O&M facility outside the Shady Grove planning area, and the use of a grade-separated route to carry the CCT across MD 355/Frederick Road (including a safe at-grade pedestrian crossing). Each of these scenarios is a possibility under the current CCT study, which aims to provide a convenient transit connection to Metrorail at the Shady Grove Station.
- The *Countywide Bikeways Functional Master Plan* (May 2004 Planning Board Draft) establishes the countywide bikeway network plan for all of Montgomery County, serving as an amendment to all community master plans and sector plans. It recommends nearly 200 bikeways, totaling more than 500 miles. The plan calls generally for bikeways to be developed or enhanced incrementally, in conjunction with roadway and sidewalk improvement projects. Specifically, the plan identifies a shared-use path along the CCT noting that some segments already exist as parts of other bikeways. The plan also calls for all bikeways that connect to transit stations (including Shady Grove

Metrorail Station and proposed CCT stations) to be considered high priority.

Three scenic byway and heritage areas were designated since the 2002 DEIS and have portions of their boundaries located within the I-270/US 15 Corridor study limits. The three resource areas include the Catoctin Mountain Scenic Byway, the Heart of the Civil War Heritage Area and the Journey Through Hallowed Ground. The scenic byway is part of the U.S. Department of Transportation's National Scenic Byways Program that is administered through FHWA. The program was organized to recognize, protect and promote America's most outstanding roads. Through the state departments of transportation, communities can apply for designation as a State or National Scenic Byway for funding from the FHWA. Congress established the program in 1991 under the Intermodal Surface Transportation Efficiency Act.

- ***Catoctin Mountain Scenic Byway:*** The Catoctin Mountain Scenic Byway follows US 15 in Frederick County, Maryland. The route was designated as a National Scenic Byway on September 22, 2005. This byway is the gateway to mid-Maryland's historic, scenic, and natural recreational opportunities along the Catoctin Mountains.
- ***Heart of the Civil War State Heritage Area:*** The Heart of the Civil War State Heritage Area is a state-certified heritage area encompassing Carroll, Frederick, and Washington Counties. The area played a significant role during the Civil War including military engagements, troop field stations and hospitals that dotted the region during much of the war. The heritage area highlights and promotes the stewardship of these historic, cultural and natural Civil War resources, as well as the visitor and educational experience. The heritage area management plan was completed in 2006.
- ***Journey Through Hallowed Ground (JTHG) National Heritage Area:*** The JTHG follows US 15, US Route 15 Business and Virginia Routes 20, 231, 22 and 53 from Gettysburg, Pennsylvania, to Monticello in Charlottesville, Virginia. The JTHG National Heritage Area was designated on May 8, 2008. The JTHG includes nine Presidential

homes, the largest concentration of Civil War Battlefield sites in the country, and 18 historic Main Street communities along with magnificent views, historic sites and natural Piedmont landscapes.

In addition, three new Maryland Department of Transportation initiatives were developed to guide transportation growth in Maryland:

- The September 2007 *MARC Growth and Investment Plan* was developed by MTA in response to the growing ridership on all three MARC lines, which has led to crowding at some stations and park and ride lots. Along the MARC Brunswick Line, which transects the study area, MARC has added parking spaces at the Point of Rocks Station, and plans to increase seating capacity by adding additional passenger cars to existing trains by 2010. Additional plans over the following decades include doubling service levels on the new Frederick Branch, expanding parking capacity at selected stations, and adding some weekend and reverse-commute service. Under the plan, total seating capacity on the Brunswick Line is expected to grow from the current 7,000 passengers per day to 26,000 by 2035.
- MDOT's *Maryland's Statewide Express Toll Lanes Network Initiative* (Winter 2005) provides an overview of the state's vision for regional connectivity through the implementation of managed lanes (including ETLs, High Occupancy Vehicle (HOV), and High Occupancy Toll (HOT)) on major transportation routes. The implementation of ETLs on I-270 between the Capital Beltway (I-495) and I-70 is included in the regional plan.
- On April 20, 2007, Governor Martin O'Malley signed Executive Order 01.01.2007.07 (the Order) establishing the Maryland Commission on Climate Change (the Commission). Sixteen State agency heads and six members of the General Assembly comprise the Commission. The principal charge of the Commission is to develop a Plan of Action – the Climate Action Plan (Plan) – to address the drivers of climate change, to prepare for its likely impacts in Maryland, and to establish goals and timetables for implementation. The Plan outlines policies, tools, and programs needed to ensure that

transportation and land development contribute to achieving Maryland's greenhouse gas (GHG) emissions reduction goals. While Maryland has set statewide goals for reducing GHG emissions, the details of implementation have not been fully realized to date. The project team will monitor the Plan continuously, to assure project consistency with future Plan updates.

In a separate project effort, SHA and the Virginia Department of Transportation (VDOT) initiated the West Side Mobility Feasibility Study in 2006 to examine the engineering and highway operational effects of adding a managed lane system to I-270 and I-495 from the I-270/I-370 interchange south and west to north of the Dulles Toll Road via the I-270 West Spur and over the American Legion Bridge. The purpose of the West Side Mobility Study is to develop a range of alternative capital investment and operating scenarios to provide additional capacity and a managed lanes network between I-370, and the Intercounty Connector (ICC) and I-270/US 15 Multi-Modal Corridor Study, and the VDOT HOT lanes project. The feasibility study includes long-term, short-term and mid-term improvements and is considering traffic operations, impacts and cost. The long-term improvements include widening and interchange improvements; short-term improvements include small scale measures to address localized congestion points; the mid-term improvements would provide additional capacity within the existing highway footprint. The long- and mid-term improvements would include a one- or two-lane managed lanes network (per direction) that would provide continuity between the VDOT HOT lanes, ICC tolled roadway, and the I-270 ETLs. The lane transitions at each of these projects/locations are being considered as part of the feasibility study. Maryland SHA and VDOT will coordinate the results of the West Side Mobility Study with the FHWA and determine the next step in the planning process.

Additional information for the West Side Mobility Study is available for viewing and download at <http://capitalbeltway.mdprojects.com/nav6.htm>





Table I-1: Transportation Improvements Programmed for I-270/US 15 Corridor included in 2030 Forecasts

LOCATION	DESCRIPTION	PROJECTED COMPLETION DATE
HIGHWAY UPGRADE, RECONSTRUCTION, EXTENSION AND WIDENING PROJECTS		
US 15 at Monocacy Boulevard	Construct a new interchange at US 15 and Monocacy Boulevard	2010
I-70 from Mt. Phillip Road to MD 144 (Baltimore National Pike)	Extend MD 475 (East St) from South Street to proposed Monocacy Boulevard, including storm water management ponds and new urban diamond interchange with I-70 and ramps to Walser Drive	Under construction
	Replace I-70 bridge over Reich’s Ford Road & reconstruct ramps, widen from MD 144 to west of Monocacy Boulevard; reconstruct Monocacy Boulevard interchange	2015
	Widen to 6 lanes, New Design Road to Mt. Phillip Road	2015
I-270 Interchange at Watkins Mill Road	Widen and extend Watkins Mill Road from 4-6 lanes; construct interchange; add 2-lane collector-distributor roads NB & SB on I-270	2020
I-270 at MD 121	Reconstruct interchange of I-270 and MD 121	2010
MD 27 from MD 355 to Snowden Farm Parkway (A-305)	Widen to 6 lanes from MD 355 to Midcounty Highway.; widen to 4 lanes from Midcounty Highway. to Snowden Farm Parkway	2010
Midcounty Highway (M-83) from Montgomery Village Avenue to MD 27	Construct 4 to 6 lane roadway	2020
MD 85 from English Muffin Way to north of Grove Road	Upgrade MD 85 to multi-land divided highway	2020
MD 117 from Great Seneca Park (sic.) [Seneca Creek State Park] to I-270	Improve roadway and reconstruct intersections to provide capacity and improve operations. Includes sidewalks where appropriate & multi-use path on south side.	Engineering to be completed by 2010
MD 118 from MD 355 to M-83 (Midcounty Highway)/ Watkins Mill Road	Extend MD 118 as a 6-lane divided highway (includes bicycle/pedestrian accommodation)	2020
MD 355/MD 80 Urbana Bypass, east of I-270 north & south of Urbana	Construct to 4 lanes relocated east of I-270, from north of MD 80 to south of MD 80, including intersection (2 separate projects)	2010
Father Hurley Boulevard from Wisteria Road to MD 118 Relocated	Construct final link of Father Hurley as a 4- or 6-lane roadway (includes bridge over CSX railroad; includes bicycle/pedestrian accommodation)	2010
Middlebrook Road Extended from MD 355 to M-83	Study to construct 6 lanes	2010
I-270: replace bridge over Doctor Perry Road	Existing bridge is deteriorated.	2010
Dorsey Mill Road from Century Boulevard to Observation Drive	Connect Dorsey Mill Road between Century Boulevard and Observation Drive via an overpass of I-270	Not available
Observation Drive extended north to Stringtown Road	Planning study to extend Observation Drive as a 4-lane divided roadway from south of Little Seneca Creek to Clarksburg Town Center	Not available
Intercounty Connector (ICC)	Construct toll freeway between I-270 and I-95/US1; engineering, right-of-way acquisition and construction under way	2012
TRANSIT EXTENSIONS AND PARKING EXPANSION PROJECTS		
Olney Transit Center	Construction of transit center in Olney	2015
Montgomery County Randolph Road bus enhancements	Bus Rapid Transit (BRT) from MD 355 to US 29	2010

LOCATION	DESCRIPTION	PROJECTED COMPLETION DATE
Clarksburg Transit Center	Construct Transit Center	2015
Paul S. Sarbanes Transit Center Silver Spring	Transit center at Silver Spring to include Metrorail/MARC station, local and intercity bus, and a taxi queue area. Incorporates connections for a possible future Bi-County Transitway (Purple Line) and/or hiker/biker trail. Phase I construction is complete.	2010
Purple Line	Study of 16-mile transitway between New Carrollton and Bethesda Metrorail stations, connecting the Metrorail Red, Green and Orange lines to key destinations in Prince George’s and Montgomery Counties.	Planning to be completed in 2010

Sources: MWCOG 2007 CLRP, Montgomery County’s Ten-Year Transportation Plan September 2007, and MDOT 2008-2013 CTP.

Programmed Improvements

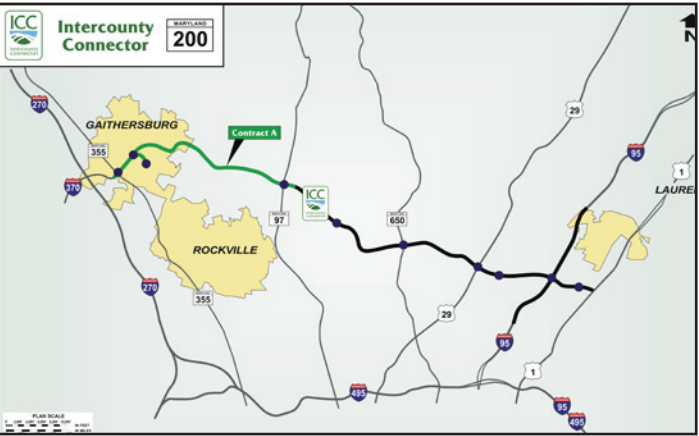
Programmed improvements associated with the I-270/US 15 Corridor study area are identified in the Metropolitan Washington Council of Governments (MWCOG) 2007 Constrained Long Range Transportation Plan (CLRP), as amended, and in the Maryland Consolidated Transportation Program 2007 – 2012 (CTP) and listed in **Table I-1**. Though not listed, the I-270/US 15 Multi-Modal Corridor Study, including the CCT, is also included in the CLRP.

Project Changes

Since the 2002 DEIS, the following roadway and transit improvements have been completed in the Corridor:

- I-270/MD 117 Interchange – An interchange improvement was completed that added a 368-space park and ride lot.
- US 15/MD 26 Interchange – An interchange improvement project was completed in 2006, adding a new northbound on-ramp to US 15 at this location.
- MD 124 from MD 28 to Longdraft Road – The roadway was reconstructed as a six-lane highway.
- MD 28 from Riffle Ford Road to Shady Grove Road – MD 28 was widened to a four-lane divided highway, with six lanes between Muddy Branch Road and Shady Grove Road.
- Shady Grove Metrorail Station Parking Garage – A second garage opened in May 2003, adding 2,140 additional spaces for a total parking capacity of 5,865 spaces.

- Montgomery County Transit Centers – A 500-space park and ride lot and town center was opened at US 29 and MD 198 in Burtonsville and a 300-space park and ride lot was opened at Lakeforest Mall in Gaithersburg.
- Point of Rocks MARC Station – Parking lot capacity was expanded to 550 spaces.
- Ride On Express Bus from Germantown to Shady Grove – Bus Route 100 operates directly on I-270 and I-370 and was greatly expanded in 2006 to provide more frequent service in peak periods.
- US 15 Auxiliary Lane – An auxiliary lane was constructed in 2004 on US 15 southbound connecting the Rosemont Avenue southbound on-ramp acceleration lane with the US 40 southbound off-ramp deceleration lane
- I-270 Auxiliary Lane – An auxiliary lane was constructed in 2007 on I-270 southbound connecting the I-70 eastbound on-ramp acceleration lane with the MD 85 southbound off-ramp deceleration lane.
- MD 355 at I-70 – New ramps were constructed from eastbound I-70 to MD 355, MD 85 was relocated at MD 355, and MD 355 was widened from south of I-70 for 2,000 feet.
- MD 27 was widened to six lanes from Observation Drive to MD 355.



The Intercounty Connector (ICC) project, a limited access highway connecting US 1 in Prince George’s County and I-370 in Montgomery County, had planning studies restarted by MDOT in 2003 after the I-270/US 15 2002 DEIS public hearings were held. A fully-tolled, limited access highway build alternative was chosen for the ICC following completion of its DEIS and FEIS, and the Record of Decision was signed in 2006. The ICC facility was not included in the MWCOG travel demand model for the 2002 DEIS alternatives because the ICC facility was not listed in the then current MWCOG long-range plan (CLRP). The current MWCOG CLRP includes the ICC, and this highway is a roadway link within the current MWCOG travel demand model. This model is being used to forecast traffic volumes and transit ridership for the I-270/US 15 AA/EA build and no-build alternatives to account for trips made on the transportation network that includes the ICC. Construction is underway for the ICC with the westernmost segment (Contract A) slated to open in late 2010 and the entire highway to be completed by late 2011 or early 2012.

Changes in the project’s description since the 2002 DEIS include the following:

**Express Toll Lanes**

ETLs are generally new capacity tolled highway lanes which can be combined with existing highway lanes, providing motorists a choice to pay a fee for a relatively congestion-free trip when travel time is critical. Tolls, collected electronically, would vary based on demand, and would provide an additional source of funding for roadway construction and maintenance. ETLs, like HOV

lanes, can also be used by public buses to improve travel times for transit users. Two alternatives are added to the project that include the implementation of one or two ETLs and direct access ramps as part of the highway component. The addition of ETLs resulted in a change in the southern limit for mainline construction to approximately 2,000 feet south of the I-270/Shady Grove Road interchange to allow for transition between the ETLs and existing HOV lanes.

**Residential Displacement Minimization**

Proposed improvements shown in the DEIS and at the June 2002 Public Hearings identified 35 residential displacements in the Fox Chapel community. A minimization option was designed subsequent to the 2002 DEIS that would avoid displacements in this community. Avoidance and minimization of residential displacements is continually being reviewed and shall continue as design proceeds.

**Interchanges**

The southbound ramps at the proposed interchange at I-270/Newcut Road have been reconfigured to the southwest quadrant based on environmental coordination with the US Army Corps of Engineers (USACE). The proposed interchange reconfiguration represents an alternative to be considered versus the configuration proposed in the DEIS.

The I-270/MD 121 interchange improvements have been broken out as a separate project, led by a private developer. The planning study investigated additional transportation movements that were not included in the DEIS, due to newly-approved development west of the existing interchange. The selected interchange improvements are under design for construction in 2009.

The I-270/MD 85 intersection has been reconfigured since the DEIS to address changes in traffic forecasts.

The US 15 interchange with Monocacy Boulevard/ Christopher’s Crossing has been broken out as a separate project planning study led by SHA, and project planning is nearly complete.

The I-270/I-370 direct access ramps have been reconfigured to reduce the number of residential displacements north of the interchange.

Table I-2: Demographic Forecasts

AREA	2000 POPULATION	2030 POPULATION	PERCENT CHANGE	2000 EMPLOYMENT	2030 EMPLOYMENT	PERCENT CHANGE
Montgomery County	875,672	1,158,074	32.2%	474,602	670,404	41.3%
Frederick County	195,277	339,696	74.0%	96,304	167,257	73.7%
Metropolitan Washington Region*	5,748,109	8,250,078	43.5%	3,506,663	5,275,961	50.5%

\* The Metropolitan Washington Region includes: Anne Arundel, Calvert, Carroll, Charles, Frederick, Howard, Montgomery, Prince George’s and St. Mary’s Counties in Maryland; Arlington, Clarke, Fairfax, Fauquier, King George, Loudoun, Prince William, Spotsylvania, and Stafford Counties in Virginia; Jefferson County in West Virginia; the cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas and Manassas Park in Virginia; and the District of Columbia.

Source: MWCOG, Round 7.0a (October 2006) Cooperative Forecast

The I-270/MD 117 interchange has been modified from the DEIS configuration to accommodate potential ETL direct access to/from the south. The proposed southbound I-270 exit ramp has been eliminated due to a change in traffic projections.

The I-270/Watkins Mill Road HOV direct access ramps described in the DEIS have been relocated to a proposed Metropolitan Grove Road Extended interchange (between MD 124 and the proposed Watkins Mill Road interchange). The Metropolitan Grove Road Extended interchange would provide access to/from the ETLs only and would provide access to the proposed Metropolitan Grove CCT station and the existing Metropolitan Grove MARC station.

The MD 118 bridge over I-270 is proposed to be relocated to accommodate the ETL direct access ramps.

**Collector-Distributor (CD) Roadways**

The existing northbound CD roadway system, signed as the “Local” lanes, would be removed from I-370 to north of MD 124 to accommodate the proposed ETL roadway alternatives. The CD roadway between Montrose Road and I-370 will remain in place.

**Transit Element Changes**

Some of the proposed locations for the CCT O&M facilities have been eliminated through the screening process, and new sites have been added. As described in Chapter II, of the eight sites retained in the DEIS for additional study, only one site is still being considered

and four new sites have been identified. At this time, two sites in the Shady Grove area, two sites in the Metropolitan Grove area and one site in the COMSAT area are being studied. Some of these sites would be suitable for LRT or BRT only.

**Need for Transportation Improvements**

This section updates and enhances descriptions of the three contributors to the project need: population and employment growth, current and projected growth in traffic congestion, and limitations of the current transit services. Some of the projected increases in traffic volumes and development within the Corridor since the DEIS have been realized, but the need for a solution remains imperative.

**Regional Population and Employment Growth Update**

Round 7.0a Cooperative Forecasts of demographics were approved by MWCOG on October 11, 2006, and provide projections of population, household and employment growth to the year 2030. These forecasts indicate that population, household, and employment growth has occurred since the DEIS and is expected to continue in the Metropolitan Washington Region, including Montgomery County and Frederick County. Table I-2 identifies population and employment projections for 2030 based upon the MWCOG forecasts.





Growth trends in the metropolitan region 2000-2030 indicate the following:

- Population in Montgomery County is expected to increase by 32.2 percent, and population in Frederick County is expected to grow by 74 percent.
- Regional population is forecast to increase 43.5 percent, exceeding 8.2 million in 2030.
- Regional employment is expected to total almost 5.3 million jobs by 2030, an over 50 percent increase over 2000 employment (almost 1.5 million additional jobs).
- In Montgomery County, employment is expected to increase at an even faster rate than population, with employment increasing by 41.3 percent between 2000 and 2030. In Frederick County, employment growth is expected to be about equal to population growth with both employment and population increasing by about 74 percent.

The MWCOG Growth Trends to 2030 (Fall 2006) noted that there is a high concentration of both population and employment growth expected along the I-270 corridor in Montgomery County.

Traffic Growth Update

Analysis of current and projected traffic volumes identify existing and future congestion that will result in reduced Levels of Service (LOS), longer travel times, and higher future travel costs. Since the analyses performed in the DEIS, changes have been incorporated into the MWCOG program that have modified the projections. On October 19, 2005, MWCOG adopted a new version of the regional traffic model, Version 2.1D#50, for use. This version restructured the portion of the model that was overestimating trip-making characteristics in the earlier versions. The current model accounts for the effects of congestion in the facility with speed feedback loops and gives more realistic forecasts. Updated land use projections have been incorporated into the new model and provide more accurate forecasts for trips generated/attracted in the modeling process.

Population and employment data have been updated to include 2000 Census data, and demographic distribution is more specific than in the previous model. In addition, a more recent version of the Highway

Capacity Software (HCS) was used to provide LOS analysis results. Again, some of the projected increases in traffic volumes and development within the corridor since the DEIS have been realized, and the need for a solution remains imperative.

Traffic volume growth on I-270 and US 15 is expected to continue. Year 2000 existing traffic volumes ranged from 210,000 vehicles per day at the southern end of the project area to approximately 41,100 vehicles per day at the northern end. The 2030 No-Build Average Daily Traffic (ADT) volumes on I-270/US 15 range from approximately 247,000 vehicles per day at the southern end of the project area to approximately 62,300 vehicles per day at the northern end, as shown in **Table I-3**.

Towards the southern end of the project area, between Shady Grove Road and Middlebrook Road, where existing and projected traffic volumes are highest, continued growth is anticipated to be somewhat slower than previously predicted. North of Middlebrook Road to I-70, however, traffic volumes are anticipated to continue to increase at a similar pace as was projected in the DEIS. North of I-70, traffic growth is also projected to be slightly lower than previously anticipated.

LOS is a quantitative measure of traffic operating conditions, using a ranking system from A to F to identify how traffic is flowing. LOS A (best condition) indicates free-flowing traffic, and LOS B and C represent a stable traffic flow. LOS D indicates traffic volumes that slightly impact the flow of traffic. With LOS E, traffic volumes are approaching the roadway capacity and speeds are reduced but relatively steady. This represents significant congestion. LOS F, the worst condition, represents stop-and-go or standstill conditions.

As noted in **Table I-3**, almost all of the existing mainline segments in 2000 were experiencing LOS D or E conditions in the peak direction during peak periods, with a few segments experiencing LOS C. By 2030, most segments of I-270 and US 15 within the study area are projected to experience LOS E to LOS F conditions during the peak hour in the peak travel direction. Following the June 2009 Public Hearings, the traffic growth in the corridor for all 2002 DEIS and

Table I-3: Average Daily Traffic Volumes and Level of Service (Existing and No-Build Alternative)

LOCATION	AVERAGE DAILY TRAFFIC VOLUMES			AM (PM) PEAK HOUR LEVELS OF SERVICE			
	2000 NO-BUILD ADT VOLUMES	PROJECTED 2030 NO-BUILD ADT VOLUMES <sup>1</sup>	ADT PERCENT GROWTH	2000		2030 <sup>1</sup>	
				SB	NB	SB	NB
I-270: Shady Grove Road and I-370	210,000	247,000	18%	D (B)	B (C)	C (B)	B (D)
I-270: MD 124 and Middlebrook Road	142,500	186,600	31%	D (B)	B (D)	F (C)	B (F)
I-270: MD 118 and Father Hurley Boulevard	96,000	148,000	54%	C (B)	B (D)	E (B)	B (D)
I-270: MD 109 and MD 80	74,000	113,800	54%	E (C)	B (F)	F (D)	D (F)
I-270: MD 80 and MD 85	80,000	141,000	76%	F (C)	C (F)	F (E)	E (F)
US 15: Opossumtown Pike and MD 26	76,000	85,500	12%	E (C)	C (E)	E (D)	C (F)
US 15: Hayward Road and Biggs Ford Road	41,125	62,300	51%	D (B)	A (D)	E (C)	B (F)

<sup>1</sup>Data derived from MWCOG Travel Demand Model Version 2.1D#50.  
NB = Northbound direction; SB = Southbound direction

2009 AA/EA alternatives will be re-examined for their traffic performance characteristics.

Transit Demand Update

The 2002 DEIS notes that the I-270/US 15 corridor is one of the most traveled north-south transportation corridors in Maryland, and provides an essential connection between the Washington, DC metropolitan area and central and western Maryland. The 2000 Census indicates that nearly 22 percent of workers residing in Montgomery County work in Washington, DC. In 2000 this added up to an estimated 99,700 commuters. While employment is growing in Montgomery County, it is expected that a large number of corridor residents will continue to travel to DC for work in the future.

Many of the commuters headed to DC use transit to avoid the high levels of congestion on the roads. Minor changes in service on individual bus routes have

occurred including the addition of bus routes to the Germantown Transit Center and new or expanded transit centers and park and ride lots.

Current Transit Services

Transit services are described by type in the following paragraphs, with general ridership numbers provided in **Table I-4**. It is clear that demand for transit services is high, particularly for those headed south towards DC.

MARC Service

MARC service is available from a number of Brunswick Line stations in Montgomery County, including the Washington Grove, Gaithersburg, Metropolitan Grove and Germantown stations located in the study area. Frederick County is served by stations in Brunswick and Point of Rocks. In 2001, MARC Service was extended northward from Point of Rocks to the City of Frederick, and two new stations were added: Monocacy and



downtown Fredrick. MARC takes commuters directly to Union Station in Washington, DC. There are some limitations to MARC service for commuters to DC, including:

- MARC serves one station in Washington, DC. Riders traveling to other locations in and around DC must transfer to the Metrorail Red Line service at Union Station, Rockville or Silver Spring Station.
- Park and ride lots at many of the MARC stations are operating at or near capacity, including Point of Rocks and Germantown. The Point of Rocks station park and ride lot recently opened its expanded 550-space capacity. Plans exist to add a parking garage to the 657-space Germantown surface park and ride lot by 2015. Parking is free at all MARC stations in the CCT corridor.
- MARC service in the corridor is only offered during weekday morning and evening peak hours, with one mid-day (1:45 PM train out of Union Station) and no weekend service. Service is only in the peak direction, making reverse commuting impossible.
- The Frederick Branch stations are served by three trains in the morning peak hours, as is the Washington Grove station, resulting in long wait times between trains. The other Brunswick Line stations are served by nine trains during peak hours, which is one train approximately every thirty minutes.

MARC is running at capacity on most of its lines, and has a number of planned projects to increase capacity in the short- and long-term. The September 2007 *MARC Growth and Investment Plan* includes increasing seating capacity by 200 seats on the Brunswick Line by 2010, largely by lengthening existing trains to accommodate growing ridership demand. Additional plans for 2015 and 2020 include increasing seating capacity by 8,400 seats, doubling service on the Frederick Branch to achieve 30-minute peak headways, and adding additional parking at the Germantown, Metropolitan Grove, and Rockville stations.

MARC rail service shares right-of-way with freight lines. Agreements with CSX Corporation will be required to implement some of the planned service improvements for the Brunswick Line.

**Metrorail Service**

Metrorail service is available at the southern end of the CCT corridor at the Red Line’s Shady Grove station. Metrorail is a heavy rail system, and service is frequent and rapid. Connections are available to other Metrorail lines near downtown, providing access to a wide range of destinations throughout Washington, DC.

The parking facilities (garages and surface lots) at the Shady Grove Metrorail station operate at capacity. Despite a recent expansion adding 2,140 spaces, and a daily charge of \$4.75 per day, the parking facilities continue to be filled. Parking capacity is currently 5,745 spaces, 76 of which are reserved for short-term (metered) use.

**Bus Service**

Over 40 bus routes serve the I-270/US 15 Corridor, with service provided by WMATA Metrobus, Montgomery County Ride On, Frederick County TransIT, and one MTA Commuter Bus (Route 991). Three routes run express service (limited stops or no stops) during peak hours. The rest are local or shuttle routes. Many routes connect to MARC stations, the Shady Grove Metrorail station, and to transit centers (e.g., Frederick, Germantown and Trville).

The Germantown Transit Center was opened in 2002. It is located at Crystal Rock Drive near the MD 118 interchange with I-270. The center includes a 175-space park and ride lot and bus bays for the nine Ride On routes that stop there (in 2002 only six routes stopped at the new transit center). It was designed to serve the Germantown community and the I-270 employment corridor with improved bus service to Gaithersburg and the Metrorail station.

MTA Route 991 provides express service from Hagerstown via I-70 to Frederick, and then via I-270 to the Shady Grove Metrorail station and Rock Spring Business Park. It travels only in the peak direction and only during morning and afternoon peak hours, with headways of about 15 minutes. As **Table I-4** shows, this route carries over 900 riders on a typical weekday.

An indicator of the high demand for a link to Metrorail service within the corridor is that 16 of the study area bus routes stop at the Shady Grove station. In general, Metrorail stations have the highest level of Ride On and

Table I-4: Current Transit Ridership

	MTA <sup>1</sup>		WMATA <sup>2</sup>		MONTGOMERY COUNTY <sup>3</sup>
	MARC BRUNSWICK LINE	COMMUTER BUS #991	SHADY GROVE METRORAIL	METROBUS (J7, J9, Q2)	RIDE ON BUS
Annual	1,887,000	231,637	7,515,500	2,731,810	27,300,000
Average Daily	7,400	932	27,292	7,609	87,397
AM Peak	3,700	475	9,345	3,872	23,400

<sup>1</sup> MTA (FY 2007)  
<sup>2</sup> WMATA (FY 2007)  
<sup>3</sup> Montgomery County DPW&T, Transit Services Division. Includes all Ride-On bus routes (FY 2006).

other Montgomery County bus services, with Shady Grove serving as a stop for 24 routes. Thirty-nine bus lines stop at the Silver Spring station, 15 stop at the Rockville station, and 10-16 bus routes stop at most of the other Metrorail stations in the County. In contrast, MARC stations between Germantown and Washington Grove are each served by one or two bus routes.

**Current and Future Transit Market**

Public transit is identified as a critical investment to provide effective mobility options for those who might otherwise use an automobile as well as those who cannot drive a car. To be successful as an alternative to the automobile, it is essential that the new transit service be on an exclusive guideway to provide a comparable or better travel time than automobiles during rush hours. Although the majority of trips will continue to be made by automobile, high frequency, high quality transit service will provide another good option for travel. The projected transit demand demonstrates a need to include expanded transit service throughout the I-270/US 15 Corridor.

The transit component of the CCT project is envisioned as serving three travel markets:

- Local commuters and travelers – Montgomery County residents working at employment locations along the corridor, or visiting retail or other businesses near proposed CCT stations.

- Traditional commuters – Residents of the I-270 corridor in Montgomery and Frederick Counties traveling to employment locations farther south, particularly to locations that can be reached on the WMATA Metrorail system.
- Reverse commuters – Residents of southern Montgomery County and Washington, DC, traveling to employment centers along the proposed CCT corridor.

This section provides a description of the existing and projected (2030) transit markets derived from the updated travel demand model. Projected conditions assume no build of the CCT, but do assume a highway improvement on I-270 of ETLs as described in Alternatives 6A/B of this document. A highway build is assumed in the regional long-range plan and transportation improvement program and provides a more conservative estimate of transit ridership.

The CCT study area has a well-established transit market. Montgomery County has traditionally shown higher transit usage than similarly-sized suburban counties. In 2000, 18 percent of commuter trips from Montgomery County used transit, higher than the 10 percent of Fairfax County, Virginia commuters and 17 percent of Prince George’s County commuters, and far exceeding Frederick County’s 1.4 percent.



Strong commuter-driven transit demand is projected to continue in the future. Without the proposed transit improvements, commuter transit share is projected to be 21 percent for Montgomery County in 2030. Frederick County’s commuter transit share is projected to be four percent in 2030, more than doubling its current transit mode share.

Non-commuter trips, which include trips for shopping, recreation, medical appointments, and visiting relatives, make up more than three-quarters of regional motorized trips. Because of dispersed locations and other factors, transit makes up a relatively small share of these trips, approximately two percent according to the travel demand model.

In Montgomery County, the transit share of non-work trips is slightly higher in inner suburban districts like Bethesda and Silver Spring, with estimated transit shares of three to six percent. Within the corridor, transit shares of these trips are similar to the rest of the region, at approximately two percent. Projections for 2030 indicate that transit’s share of non-work trips will increase slightly above today’s levels within the study area.

It should be noted that while transit makes up a small share of non-commute trips, non-commute trips in general make up nearly a third of all transit trips in Montgomery County. Non-commute trips are therefore an increasingly important component of the transit market and have the potential for future growth. In 1994, the year of the most recently published regional transit survey, nearly one third (31 percent) of transit trips from Montgomery County were non-commuter in nature. In 2030 without the CCT project improvements, non-commuter transit trips are projected to account for 44 percent of all transit trips.

As a result of contributions from both commuter trips and non-commuter trips, the total number of transit trips, as well as the transit market share for all trips in the study area, will continue to grow in the future. The current (year 2000) transit mode share for Montgomery County is 3.4 percent and is 0.3 percent for Frederick County. Without the proposed transit project,

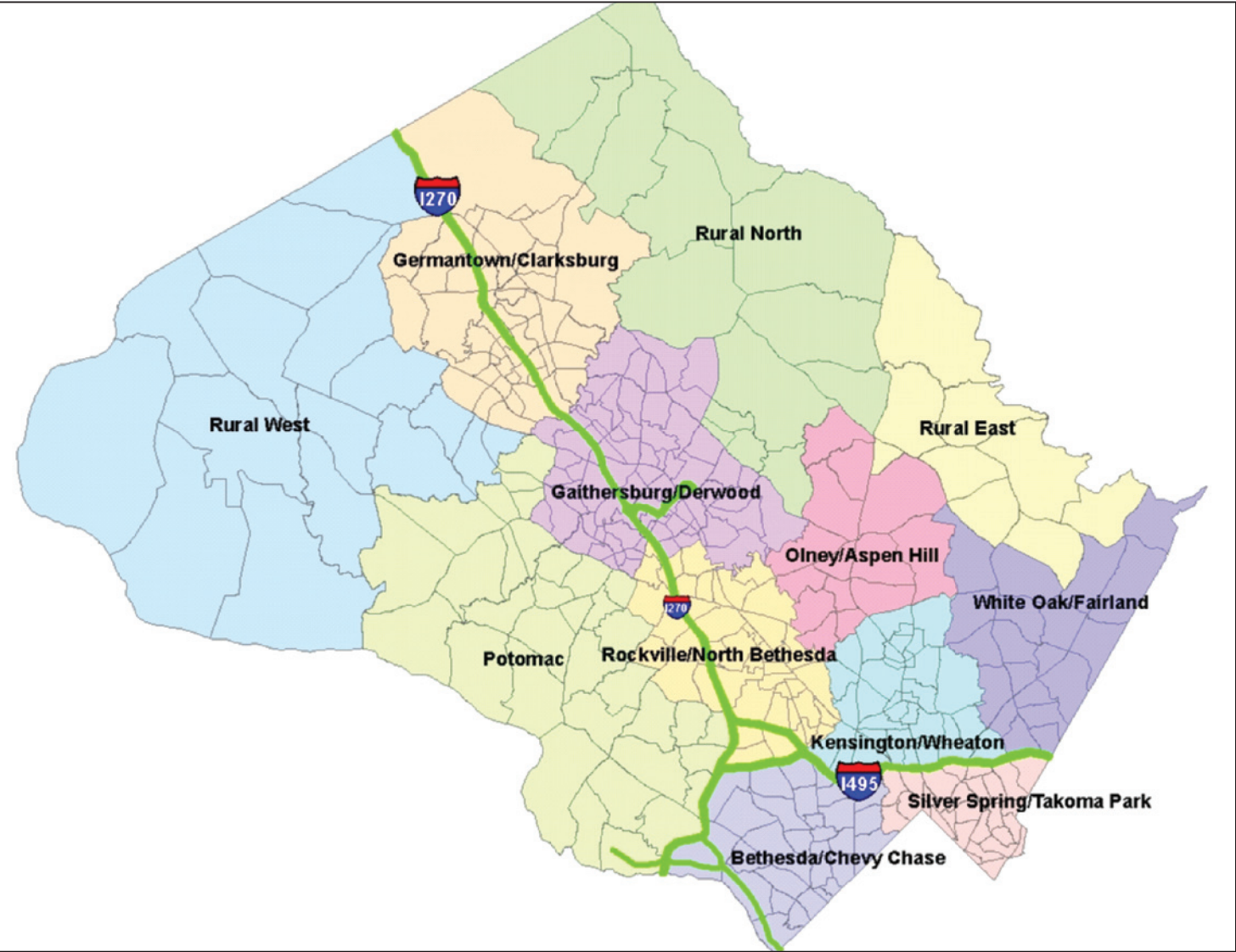
Montgomery County’s total transit trip share is projected to be 5.2 percent in 2030, while Frederick County’s total transit trip share is projected at 0.8 percent in 2030; a more than a 50 percent increase in transit trip share in both counties.

Transit Market Share by District

Transit market shares without the proposed project investment vary by district within Montgomery County. **Tables I-5 and I-6**, derived from the updated travel demand model, show 2000 estimated and 2030 projected transit shares for trips originating or ending in each district, as defined in **Figure I-2**.

- For the year 2000, transit shares were highest for trips originating from inner suburban areas such as Silver Spring/Takoma Park (10 percent), lower from the I-270 Corridor (three to five percent), and lowest from rural areas (one percent). In particular, travelers from the Gaithersburg/Derwood and Germantown/Clarksburg districts had a transit modal split of approximately three percent in 2000.
- As expected, transit shares for trips to Washington, DC were estimated to be the highest (18 percent) among destination districts in 2000; for example, transit was used for 28 percent of trips to Washington, DC from the Gaithersburg/Derwood district and 26 percent from the Germantown/Clarksburg district. While Washington, DC is a major transit destination for Montgomery County residents, Montgomery County as a transit destination is becoming increasingly important. Both the Bethesda/Chevy Chase and Silver Spring/Takoma Park districts had the second highest transit shares of approximately eight percent among the destination districts.
- Transit shares for inter-district trips within Montgomery County were estimated to be ten percent or higher for trips destined for Bethesda/Chevy Chase and Silver Spring/Takoma Park (communities served by the Metrorail Red Line) than from the other districts. For example, trips from the Gaithersburg/Derwood and Germantown/Clarksburg

Figure I-2: Montgomery County Districts





districts to the Bethesda/Chevy Chase district had a transit share of over 14 percent in 2000.

- Transit shares for intra- and inter-district trips in the I-270 corridor were estimated to be approximately five percent or less in 2000. For example, transit trips were estimated to be two percent of all motorized trips from the Gaithersburg/Derwood district to the Germantown/Clarksburg district and four percent vice versa.

Without the proposed transit improvement, transit markets are projected to continue year 2000 demand patterns in 2030 with marked increases in transit shares in Frederick, Gaithersburg/Derwood, and

Germantown/Clarksburg to Washington, DC; within and between Gaithersburg/Derwood and Germantown/Clarksburg; Frederick to Germantown/Clarksburg and Gaithersburg/Derwood; and reverse commuting between Washington, DC to Gaithersburg/Derwood and Germantown/Clarksburg.

Similarly, commuter transit market shares vary by district within Montgomery County. **Tables I-7** and **I-8** show estimated 2000 and projected 2030 commuter transit shares for trips by district.

- Commuter transit share in Montgomery County tends to be the highest in the inner suburban districts like Bethesda/Chevy Chase and Silver Spring/Takoma Park, with nearly one third of commuter trips traveling to or from these districts by transit in 2000. The middle I-270 corridor districts, Germantown/Clarksburg and Gaithersburg/Derwood were lower with 11 percent and 16 percent transit shares for residents, respectively.
- Commuter transit shares tend to be the highest for destinations at major activity centers such as the District of Columbia (37 percent), Silver Spring/Takoma Park (29 percent), Bethesda/Chevy Chase

(28 percent), and Rockville/North Bethesda (19 percent). More than one third of commuter trips from the study area to DC used transit in 2000.

- Reverse commuting was estimated to have a high transit share, 24 percent for commuter trips from DC to Gaithersburg/Derwood, and 21 to 23 percent for trips from Bethesda/Chevy Chase to Germantown/Clarksburg and Gaithersburg/Derwood districts.
- Commuter transit markets are projected to continue the existing patterns in 2030 without the project improvements, with a slight increase in transit modal split.

Table I-5: Transit Share of All Trips by District of Origin

TRIP ORIGIN DISTRICT	2000	2030
Bethesda/Chevy Chase	5.5%	6.7%
Gaithersburg/Derwood	3.3%	4.2%
Germantown/Clarksburg	3.0%	3.0%
Kensington/Wheaton	6.4%	7.2%
Olney/Aspen Hill	4.7%	5.5%
Potomac	1.6%	2.2%
Rockville/N. Bethesda	5.2%	6.1%
Rural East	1.3%	1.9%
Rural North	1.1%	1.4%
Rural West	1.7%	2.3%
Silver Spring/Takoma Park	10.0%	10.5%
White Oak/Fairland	3.9%	4.8%
District of Columbia	15.0%	14.9%
Frederick County	0.3%	0.8%
Remainder of Maryland	1.9%	2.2%
Virginia	3.2%	3.8%
Total – Metropolitan Washington Region	3.9%	6.7%

Results derived from the updated travel demand model.

Table I-6: Transit Share of All Trips by Destination District

TRIP DESTINATION DISTRICT	2000	2030
Bethesda/Chevy Chase	7.9%	8.9%
Gaithersburg/Derwood	2.3%	3.0%
Germantown/Clarksburg	1.2%	1.6%
Kensington/Wheaton	4.0%	4.2%
Olney/Aspen Hill	1.1%	1.3%
Potomac	1.2%	1.3%
Rockville/N. Bethesda	5.8%	6.8%
Rural East	0.4%	0.5%
Rural North	0.2%	0.2%
Rural West	0.2%	0.4%
Silver Spring/Takoma Park	7.5%	8.2%
White Oak/Fairland	0.4%	1.9%
District of Columbia	18.4%	19.1%
Frederick County	0.1%	0.3%
Remainder of Maryland	0.8%	1.2%
Virginia	2.4%	3.1%
Total – Metropolitan Washington Region	3.9%	4.2%

Results derived from the updated travel demand model.

Table I-7: Transit Share of Commuter Trips by District of Origin

TRIP ORIGIN DISTRICT	2000	2030
Bethesda/Chevy Chase	34.1%	28.4%
Gaithersburg/Derwood	16.4%	17.2%
Germantown/Clarksburg	11.1%	12.0%
Kensington/Wheaton	28.4%	26.5%
Olney/Aspen Hill	22.9%	21.9%
Potomac	15.5%	12.6%
Rockville/N. Bethesda	29.8%	27.9%
Rural East	11.3%	12.4%
Rural North	9.6%	9.8%
Rural West	9.8%	10.8%
Silver Spring/Takoma Park	30.1%	30.5%
White Oak/Fairland	19.0%	20.4%
District of Columbia	40.2%	40.8%
Frederick County	1.5%	4.2%
Remainder of Maryland	9.1%	9.7%
Virginia	13.6%	14.8%
Total – Metropolitan Washington Region	15.7%	15.8%

Results derived from the updated travel demand model.

Table I-8: Transit Share of Commuter Trips by Destination District

TRIP DESTINATION DISTRICT	2000	2030
Bethesda/Chevy Chase	28.2%	30.7%
Gaithersburg/Derwood	9.6%	11.6%
Germantown/Clarksburg	5.8%	9.0%
Kensington/Wheaton	23.7%	21.5%
Olney/Aspen Hill	10.6%	10.3%
Potomac	9.3%	7.5%
Rockville/N. Bethesda	19.2%	21.0%
Rural East	2.2%	2.6%
Rural North	1.8%	1.7%
Rural West	1.0%	2.5%
Silver Spring/Takoma Park	29.3%	29.9%
White Oak/Fairland	9.2%	10.1%
District of Columbia	36.9%	37.5%
Frederick County	0.2%	1.0%
Remainder of Maryland	3.2%	4.7%
Virginia	10.8%	12.7%
Total – Metropolitan Washington Region	15.7%	15.8%

Results derived from the updated travel demand model.





Transit Trip Growth by District

Transit market growth by district, shown in *Table I-9*, reflects the overall growth of the study area in terms of population, households, employment, and associated travel needs.

Daily transit trips from Montgomery County as a whole are projected to grow by 105,000 trips or 66 percent, accounting for nearly six percent of the county’s motorized person-trip growth. Regional transit trips are projected to grow by 72 percent, making up nearly five percent of the region’s motorized person-trip growth.

Reverse Commuting

The I-270 corridor is home to thousands of jobs in Montgomery and Frederick Counties, and there are a large number of residents located south of the study corridor in southern Montgomery County and the District of Columbia. Employment in Montgomery County, currently (2005) over 500,000 jobs, is expected to grow by 34 percent by 2030, adding over 170,000 jobs, increasing the attractiveness of the area for reverse-commuting.

The improved travel demand model indicates that in 2030 without the proposed transit project, approximately 9,400 people will commute daily to businesses and government offices in the CCT corridor from residential areas adjacent to Red Line Metrorail stations in southern Montgomery County and Washington, DC. The transit share of these trips is assumed to be low in view of the fact that there is no MARC service in the reverse-commute direction, and all bus service travels in shared lanes, offering no travel time advantage over private auto travel.

While Metrorail stations are served well by Ride On bus routes, many destinations in the study area, such as COMSAT and the Department of Energy Headquarters in Germantown, are served by just one bus route. Some of the system’s bus routes run infrequently, further limiting opportunities for commuting by transit, particularly for long-distance commuters who need to make connections.

Transit improvements on the CCT corridor could increase the share of reverse-commute trips made by

transit. The planned CCT would connect to the Shady Grove Metrorail station, and stop in the vicinity of a number of major employment centers in Montgomery County.

Intermodal Connectivity and Land Use

The existing transportation system includes many intermodal connections, linking roads, pedestrian and bicycle paths, local bus service, and MARC and Metrorail stations. The proposed highway alternatives would provide additional connections to the roadway network. ETLs would link with local roads, highways, and HOV lanes in the region. ETLs would also accommodate buses, enhancing links to existing bus services. Under the transit build alternatives, numerous stations would be added, providing park and ride lots, as well as pedestrian and transit linkages. The transit build alternatives would also include a bicycle path that will provide safe linkages between communities along the CCT corridor, and allow for connections to the proposed stations. The proposed transit TSM alternative would provide transit service in the study area at a comparable level of transit access and transit service connectivity without constructing a dedicated right-of-way. The proposed transit TSM alternative would simulate the routes, station stops and operational efficiencies of the proposed CCT by using existing roads and selected highway upgrades to provide direct access to stations as well as take advantage of the highway improvements assumed for 2030 that are included in the 2008 CLRP, including managed lanes on I-270 and direct access ramps to park and ride and station facilities.

Transit Connectivity

There are 16 park and ride lots in the I-270 corridor between Frederick and Shady Grove Metrorail station including one transit center, one Metrorail station, and six MARC stations.

Buses serving the corridor in both counties are routed to stop at transit centers, MARC stations and Metrorail stations, many of which include bus bays for safe and convenient transfers. MARC and Metrorail intersect outside of the corridor, with Rockville and Silver Spring being the nearest MARC stations offering transfers.

Table I-9: Growth in Transit Trip Share of All Trips by Origin District

TRIP ORIGIN DISTRICT	PERSON-TRIPS (ALL MODES)		TRANSIT TRIPS	
	GROWTH IN PERSON-TRIPS 2000-2030	PERCENT GROWTH	GROWTH IN TRANSIT TRIPS 2000-2030	PERCENT GROWTH
Montgomery County	1,676,000	49%	105,000	66%
Bethesda/Chevy Chase	165,222	44%	15,402	73%
Gaithersburg/Derwood	352,727	54%	21,341	99%
Germantown/Clarksburg	284,440	109%	8,507	110%
Kensington/Wheaton	93,006	28%	9,319	44%
Olney/Aspen Hill	47,029	18%	4,760	39%
Potomac	165,848	82%	5,014	159%
Rockville/N. Bethesda	241,395	52%	19,156	80%
Rural East	46,479	59%	1,312	127%
Rural North	68,541	58%	1,455	117%
Rural West	46,275	76%	1,401	134%
Silver Spring/Takoma Park	90,636	27%	11,130	33%
White Oak/Fairland	74,052	26%	6,296	57%
District of Columbia	577,527	34%	85,103	34%
Frederick County	548,774	76%	8,410	451%
Remainder of Maryland	2,828,514	43%	85,118	68%
Virginia	6,312,213	81%	285,881	115%
Total – Metropolitan Washington Region	11,942,678	59%	569,605	72%

Results derived from the updated travel demand model.

Parking is available at each of the rail stations serving the corridor, although there are often no spaces available by the end of the morning peak hour, which limits ridership.

The CCT alternatives, including TSM/TDM, BRT, and LRT would integrate with Shady Grove Metrorail station, Metropolitan Grove MARC station and Germantown Transit Center, and are designed to be served by feeder buses operating throughout Montgomery County. Each of the alternatives proposes 13 CCT stations, including the Shady Grove Metrorail station, seven with park and ride lots.

### ETL System Connectivity

The I-270 ETL Alternatives would serve motorists on I-270 between I-370 and north of MD 80. Vehicles using the ETLs on I-270 would be able to continue to other potential or planned toll lane facilities in Montgomery County. These include:

- The ICC, a planned toll roadway, will provide a connection between I-270/I-370 and I-95/US 1, north of the Capital Beltway
- The Capital Beltway in Maryland, approximately nine miles south of the project limit, planning study includes ETLs as an alternative to HOV lanes
- The potential to extend ETLs along I-270 from I-370 to the Capital Beltway
- More regional toll lane facility connections including HOT lanes planned for the Virginia portion of I-495 and ETLs being developed for I-95 in Maryland

### Pedestrian/Bicycle Connectivity

MTA conducted a study of the existing and planned trail network for the project corridor to develop a better understanding of the planning issues associated with including a parallel trail along the proposed transitway. The study investigated issues, opportunities and potential costs for constructing the trail. Specific tasks included the following:

- Establish the baseline planning assumptions including local plans and existing environmental conditions

- Determine the right-of-way availability for the transitway, including the trail
- coordinate with local agency representatives on previous planning efforts, identify issues and potential alternative alignments
- Identify potential alternatives to avoid areas of engineering challenge
- Identify costs associated with construction of the trail

Construction of the parallel trail would make it easier for surrounding neighborhoods to connect to the transitway. Access to stations using the trail is the primary objective. In addition, it is anticipated that local jurisdictions would plan and, as appropriate, implement trail construction to provide connections to the transitway from neighborhoods not directly adjacent to the transitway.

Montgomery County encourages the development and use of bicycle and pedestrian facilities. The Maryland-National Capital Park and Planning Commission, which covers Montgomery and Prince George's counties, requires developers to continue sidewalks and bike paths that are adjacent to their properties. Montgomery County Commuter Services promotes bicycling as part of its *Better Ways to Work!* program. Both the State of Maryland and Montgomery County have policies that encourage bicycle facilities to be included as part of all appropriate roadway projects.

Montgomery County's *Countywide Bikeways Functional Master Plan* calls for bikeways to be built in conjunction with roadway and sidewalk improvements. Higher priority is given to paths that connect major activity centers, specifically including transit centers, central business districts, major employment centers, and existing park trails. The *Master Plan* assumes that a shared-use path will be built along the entire length of the proposed CCT. Identified as SP-66 in the *Master Plan*, the path is listed as a high priority project because it could serve pedestrians as well as bicyclists as an important connection to major employment centers in the I-270 corridor. Proposed CCT stations are included in the bikeway mapping, with the *Master Plan* encouraging additional bikeways to connect to these stations.

Pedestrian and bicycle connections to transit already exist in the CCT corridor. Bike racks are included on all Ride On buses, all WMATA Metrobuses, and most TransIT buses, and bike racks are available at all MARC and Metrorail stations. According to the 2004 Montgomery County *Countywide Bikeways Functional Master Plan*, all MARC stations in the corridor have one or two bike racks. Metrorail stations generally have more, with Shady Grove station providing 60 bike lockers and rack space for 32 bikes. The *Master Plan* noted that Shady Grove's bicycle facilities were about one-third utilized, although demand was expected to increase with the redevelopment of the station area and the planned bikeway improvements along Shady Grove Road, Redland Road, Crabbs Branch Way, and the proposed CCT alignment on King Farm Boulevard.

### Transit-Supportive Land Use

In general, transit functions most effectively where densities are highest. A station or stop that is within walking distance of a few thousand homes or employees, for example, will be more heavily used than one that is within walking distance of only a few hundred. Transit systems also do well when stations are positioned to enable easy walking access to major employment centers or other attractions. Transit-oriented developments are areas where high-density, mixed use developments are clustered around transit stations or corridors.

There are a number of employment centers along or near the planned CCT corridor, including COMSAT, National Institute of Standards and Technology (NIST), the Montgomery County Correctional Facility, Montgomery College Germantown Campus, the Department of Energy Headquarters, Kentlands, and the MedImmune headquarters in Gaithersburg. There are also plans for new mixed use employment, commercial and residential centers along the corridor, including a Johns Hopkins biotechnology park, the Casey Property development (near the Metropolitan Grove MARC station) and the Crown Farm. Many of these are located near planned CCT stations and are being designed in anticipation of transit access. Others could be served by shuttle bus services. Planned and programmed development in Montgomery County, including transit-oriented development is discussed in greater detail in **Chapter IV.A.**

Some developments have constructed or planned higher residential densities along the proposed CCT corridor, in expectation of future construction of a BRT or LRT line. The King Farm property, for example, is a large development in Rockville. Started in 1997, much of the property has been built and includes both residential and commercial structures. King Farm Boulevard, the main thoroughfare for this property, has a wide landscaped median designed to support a future CCT busway or rail line. Residential densities are highest along this boulevard, and a commercial center is being developed around the proposed West Gaither station.

The Casey Property, adjacent to the Metropolitan Grove MARC station, is also along the proposed CCT corridor. This property is building its center near the MARC station as an "urban core" to include high-rise condominiums, office buildings, ground-floor commercial, and possibly a parking structure for MARC commuters as well. Densities are planned to be greatest immediately adjacent to the proposed CCT station.

Another planned development is the Crown Farm, annexed into the City of Gaithersburg and located west of I-270 and Shady Grove Road. This development is also planning high-rise residential structures that would include ground-level retail and be located near a proposed CCT station. The developers were quoted in a 2006 newspaper article as envisioning a community "in which people can live, shop and work without driving."







# Chapter II – Alternatives Considered







# Alternatives Considered

## Introduction

The I-270/US 15 Multi-Modal Corridor Study is considering the addition of both highway and transit alternatives.

The project looks at several ways to add capacity to the highway, including the addition of general purpose (GP) lanes or managed lanes – either high-occupancy vehicle (HOV) lanes or Express Toll Lanes<sup>SM</sup> (ETLs<sup>SM</sup>). Other proposed highway improvements include the addition of collector/distributor (CD) lanes, acceleration/deceleration lanes, auxiliary lanes, new and improved interchanges, and park and ride lots.

The transit alternatives being considered are light rail transit (LRT) or bus rapid transit (BRT) on the Corridor Cities Transitway (CCT), Premium Bus service operating on the highway’s managed lanes, and a shared use path for bicyclists and pedestrians.

This chapter defines the various modes and system improvements under consideration for the Corridor and reviews the 2002 Draft Environmental Impact Statement (DEIS) alternatives retained for detailed study. Next, the chapter introduces the new highway and transit alternatives evaluated for this Alternatives Analysis/Environmental Assessment (AA/EA) document, followed by a description of the alternatives evaluated for the transit Alternatives Analysis.

## Highway Improvement Descriptions

The I-270/US 15 highway alternatives propose various types of improvements. A brief description of the various lane types includes:

- **General Purpose** (GP) lanes are regular traffic lanes designed to accommodate all motor vehicle traffic on interstate and state highways, generally posted at speeds of 55 miles per hour or higher.
- **High Occupancy Vehicle** (HOV) lanes are dedicated lanes which can only be used by vehicles with two or more occupants or by motorcycles. They may be separated from the GP lanes by striping or by a barrier. HOV lanes are managed lanes which are designed to encourage carpooling. I-270 currently

has one HOV lane, designated as HOV-2, in both the northbound and southbound directions. HOV-2 requires at least two persons per vehicle.

- **Express Toll Lanes** (ETLs) are another type of managed lanes designed to alleviate congestion in GP lanes and provide relatively free-flowing traffic. ETLs are limited-access, tolled interstate highway lanes that are usually barrier-separated from GP lanes. Motorists who wish to travel in the less congested ETLs pay a toll that is collected at highway speeds by an *E-ZPass*<sup>SM</sup> transponder.
- **Collector/Distributor** (CD) lanes are one-way roads next to the interstate that operate similar to frontage roads. CD lanes provide relatively free-flowing lanes for shorter trips and are used to collect entering and exiting traffic at interchanges. This helps to eliminate weaving traffic in the main lanes of the interstate. CD lanes are barrier-separated from GP lanes and access between the CD and GP lanes is limited. I-270 currently uses a CD lane system designated as the “local” lanes.
- **Direct Access** ramps provide direct, barrier-separated access to/from managed lanes at a limited number of locations along the highway. The direct access ramps provide continuity of travel and eliminate the necessity of merging managed lane and GP lane traffic at exits and entrances.
- **Acceleration/deceleration** lanes extend the length of entry and exit ramps to provide adequate distance for entering vehicles to reach highway speeds before merging with through traffic or allow exiting vehicles to slow to appropriate ramp speeds.
- **Auxiliary** lanes are acceleration and deceleration lanes connected between consecutive interchange ramps, so that vehicles traveling from one interchange to the next do not have to merge with the through highway lanes. They may eliminate some weaving between interchanges and provide a longer distance for vehicles entering the roadway to reach highway speeds.

## EXPRESS TOLL LANES

The new highway build alternatives presented in this AA/EA document propose the use of Express Toll Lanes (ETLs). ETLs are new capacity tolled highway lanes that operate in conjunction with toll-free lanes that will provide a relatively congestion-free trip when travel time is critical. The ETLs will use variable rate tolling to manage the amount of traffic, and thus the level of congestion, within the lanes. Alternatives 6A/B and 7A/B include the construction of new ETL lanes along the median of existing I-270.

The long-term vision of the Maryland Department of Transportation ETL Network Initiative is to:

- Provide a new type of optional transportation service with reliable, relatively free-flowing travel for time-sensitive trips,
- Create infrastructure for regional express bus service on the busiest commuting routes,
- Provide increased roadway capacity in the most severely congested transportation corridors,
- Provide a sustainable solution and long-term congestion relief, and
- Make congestion relief projects affordable decades sooner than traditional approaches would allow.

The I-270 ETLs are part of a broader managed lane network planned in Maryland and northern Virginia. Roadways included in the managed lane network in Montgomery County in Maryland include the ICC, I-270, and the Capital Beltway. In northern Virginia, the managed lane network includes the Capital Beltway, I-95, I-395, and the Dulles Toll Road.

ETLs differ from the High Occupancy/Toll, or HOT, lanes that are being considered on I-95 and the Capital Beltway in Northern Virginia. On HOT lanes, a solo driver pays a fee to access High Occupancy Vehicle (HOV) lanes normally reserved for transit buses and carpools. HOVs generally are allowed to use HOT lanes free of charge or at a discounted rate. The HOT lane approach is not under consideration in Maryland at this time primarily because of limitations on the ability to enforce lane restrictions and occupancy requirements.

The ETLs proposed in Alternatives 6A/B and 7A/B of the I-270/US 15 Multi-Modal Corridor study will

be placed on the left side of I-270, and will be barrier-separated from the toll-free general-purpose lanes. Access to the ETL is gained via direct access ramps at selected interchanges or through open access areas along I-270 that operate similar to the ramps between the “local” and “express” lanes on I-270 today.

The ICC is a fully-tolled roadway that connects to I-270 at the I-370 interchange. Alternative 6A/B and 7A/B provide a direct connection between the ICC and the segment of I-270 north of I-370 via a single ETL lane. The ETL is on the median side of the roadway and begins approximately one mile east of I-270. There is also roughly one mile between the ICC terminus and the ETL terminus on I-370.

The Virginia HOT Lane project extends from the I-95/I-395 interchange to Virginia Route 193. Vanpools, carpools, and motorcycles will utilize the lanes for free, while other vehicles could access the lanes by paying a toll. Tolls will be collected at highway speeds, and two HOT lanes are proposed in each direction in the median of I-95. Once the HOT Lane project is complete, the two HOT lanes will reduce to a single lane that will tie in with the HOV lane currently in place on I-270 in Maryland. A “non-enforcement” zone is proposed to allow single-passenger vehicles to merge out of the HOV lane and into the general-purpose lanes.

The West Side Mobility Study is a feasibility study that is being undertaken by SHA to introduce ETL lanes between the northern limit of the Virginia HOT Lane project, the southern limit of the I-270/US 15 Multi-Modal Corridor study, and the ICC. The feasibility study recommends adding two ETL lanes in each direction from Virginia Route 193 to I-370. The pricing on the Virginia HOT lane system may be different than the Maryland ETL system. The same “non-enforcement” zone will need to be in place to allow those who want to leave the HOT system to enter the general-purpose lanes. It is anticipated that the West Side Mobility Study will develop into a NEPA planning study in the future. When complete, the project will connect the Virginia managed lane network to the northern portion of the Maryland managed lane network.





LRT in Houston



BRT in France

Transit Improvement Descriptions

The following terms describe important elements of the transit alternatives:

- **Corridor Cities Transitway** (CCT) is a reserved transit corridor that is identified in Montgomery County and Frederick County master plans. The CCT alignment extends from the Shady Grove Metrorail Station in Gaithersburg, Montgomery County, to downtown Frederick in Frederick County. For the I-270/US 15 Multi-Modal Corridor Study, transit is only being considered between Shady Grove and the COMSAT area in Clarksburg, Montgomery County.
- **Light Rail Transit** (LRT) is an electric railway system that can operate single cars or short trains. The LRT system proposed for this project would operate completely on a dedicated right-of-way, or guideway, separated from traffic on local streets.
- **Bus Rapid Transit** (BRT) is a mode of transit that has characteristics common to both conventional bus systems and LRT. BRT for this project would use rubber-tired transit vehicles, most likely articulated buses, along a reserved transit guideway. Vehicles would be similar to LRT vehicles in performance and appearance. However they would be able to leave the transit guideway to access local destinations using the local road network.
- **Premium Bus** service would provide bus service using dedicated (managed) highway lanes and

- direct access ramps to travel from station to station. Premium bus provides limited stop service and non-stop service between origins and destinations.
- **Corridor Cities Transitway Bike Path**, as denoted in Montgomery County planning documents, is a shared-use, hiker/biker trail that is an integral part of both the I-270/US 15 Multi-Modal Corridor Study and Montgomery County’s bikeway network.

Alternatives

The alternatives being considered for the I-270/US 15 Multi-Modal Corridor Study include those presented in the 2002 DEIS (Alternatives 1, 2, 3A/B, 4A/B and 5A/B/C), two new build alternatives (Alternatives 6A/B and 7A/B), and the alternatives required to complete the Federal Transit Administration (FTA) Alternatives Analysis. Brief descriptions of the alternatives are presented below.

Alternatives Evaluated in the 2002 DEIS

- Nine alternatives (listed in *Table II-1*) were retained and evaluated in the DEIS, including:
- Alternative 1: the No-Build Alternative;
  - Alternative 2: the Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative; and
  - Build Alternatives 3A/B, 4A/B and 5A/B/C, each of which consisted of a highway component and a transit component.

Alternative 1: No-Build Alternative

The No-Build Alternative (Alternative 1) serves as a basis for comparing all other alternatives. The No-Build Alternative does not provide any major changes to the existing transportation network. The No-Build Alternative includes minor repairs, maintenance, and safety improvements, as well as programmed improvements identified in the State’s fiscally-constrained long range transportation plan, with the exception of the proposed improvements in this study. The existing I-270 roadway is a fully access-controlled highway that provides a combination of CD, GP and HOV lanes in the northbound direction and between two and four GP lanes in the southbound direction. US 15 is a fully access-controlled highway through the City of Frederick and has limited access north of Frederick. US 15 has two GP lanes in each direction.

Existing transit services include local bus, commuter bus and commuter rail. The services, routes and operating hours are detailed in **Chapter III** in *Table III-1* and *Table III-2*.

Alternative 2: TSM/TDM Alternative

The TSM/TDM Alternative (Alternative 2) includes a number of relatively low-cost measures that are meant to improve the overall operation of the existing transportation system without major capacity improvements. TSM measures include increased local bus service, enhanced feeder bus service to existing fixed guideway transit, the addition of intelligent transportation systems to improve traffic flow and incident management on I-270, and interactive transit information made available at major employment centers. TDM measures include adding park and ride lots, rideshare programs, vanpool, pedestrian and bicycle programs, and telecommuting and flexible work hours programs. The TSM/TDM alternative also includes programmed improvements. The elements of the TSM/TDM alternative are also included as a component of each of the build alternatives.

Alternatives 3A and 3B

Alternatives 3A and 3B, as retained in the 2002 DEIS, includes Alternative 2 TSM/TDM and would add GP lanes, HOV lanes, auxiliary lanes, and direct access ramps along I-270 and GP lanes and auxiliary lanes along US 15. Alternative 3A would provide LRT on the CCT from the Shady Grove Metrorail station to

Table II-1: Alternatives Retained in the 2002 DEIS

ALTERNATIVE	DESCRIPTION
1	No-Build Alternative
2	TSM/TDM Alternative
3A	Master Plan <sup>1</sup> HOV/LRT Alternative
3B	Master Plan <sup>1</sup> HOV/BRT Alternative
4A	Master Plan <sup>1</sup> General-Purpose/LRT Alternative
4B	Master Plan <sup>1</sup> General-Purpose/BRT Alternative
5A	Enhanced <sup>2</sup> Master Plan HOV/General-Purpose/LRT Alternative
5B	Enhanced <sup>2</sup> Master Plan HOV/General-Purpose/BRT Alternative
5C	Enhanced <sup>2</sup> Master Plan HOV/General-Purpose/Premium Bus Alternative

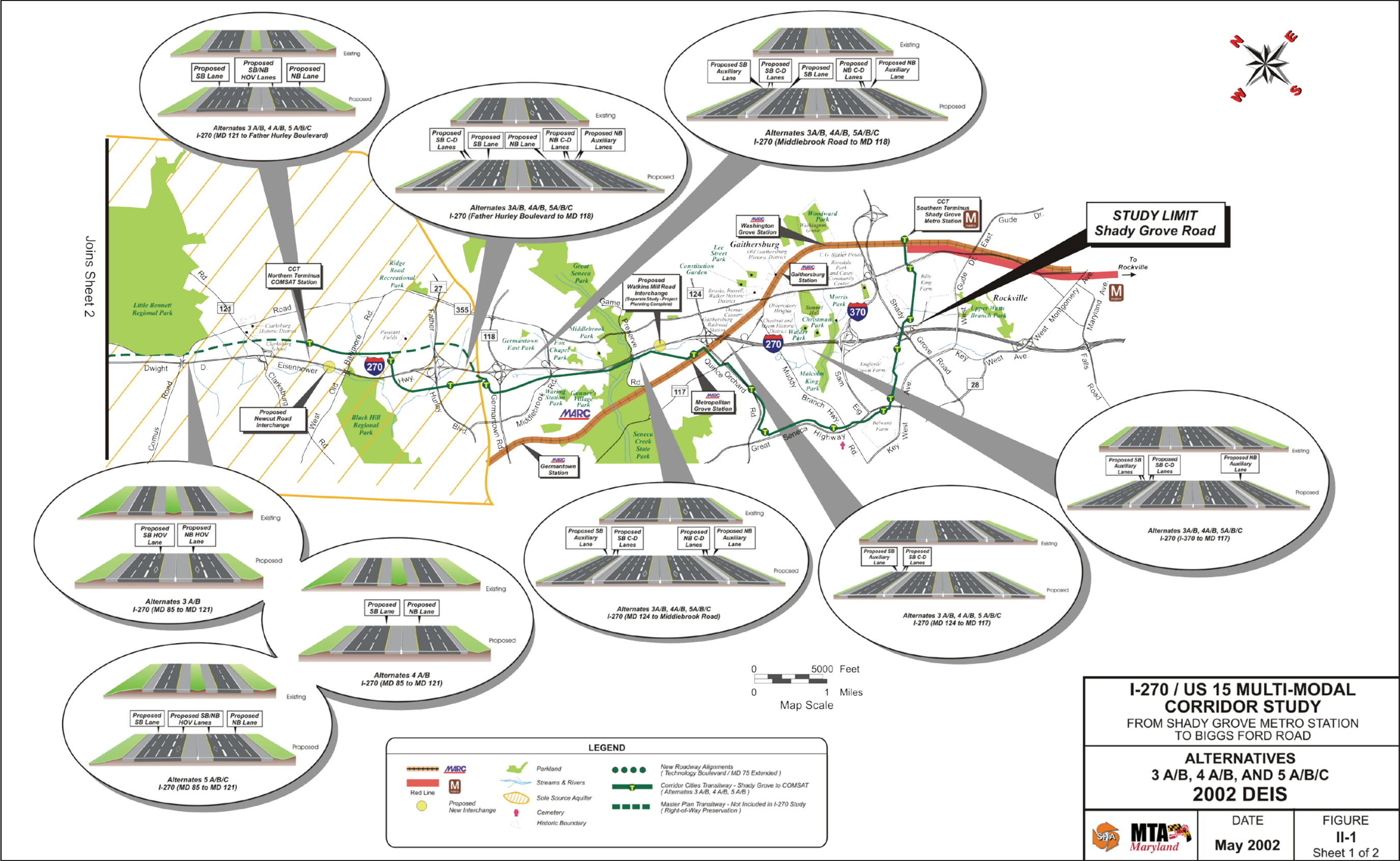
<sup>1</sup> Master Plan refers to proposed alignments along I-270 and US 15 included in the current Frederick and Montgomery County approved master plans.  
<sup>2</sup> Enhanced Master Plan refers to proposed improvements that are greater than those called for in the Montgomery County Clarksburg Area.

the Communications Satellite, Inc. (COMSAT) area in Montgomery County, while Alternative 3B would provide BRT service on the CCT between the same destinations. Alternatives 3A/B are shown on **Figures II-1 (Sheets 1 and 2) and II-2 (Sheets 1 and 2)** and can be reviewed in detail in the 2002 DEIS in Volume 2, Chapter XI.

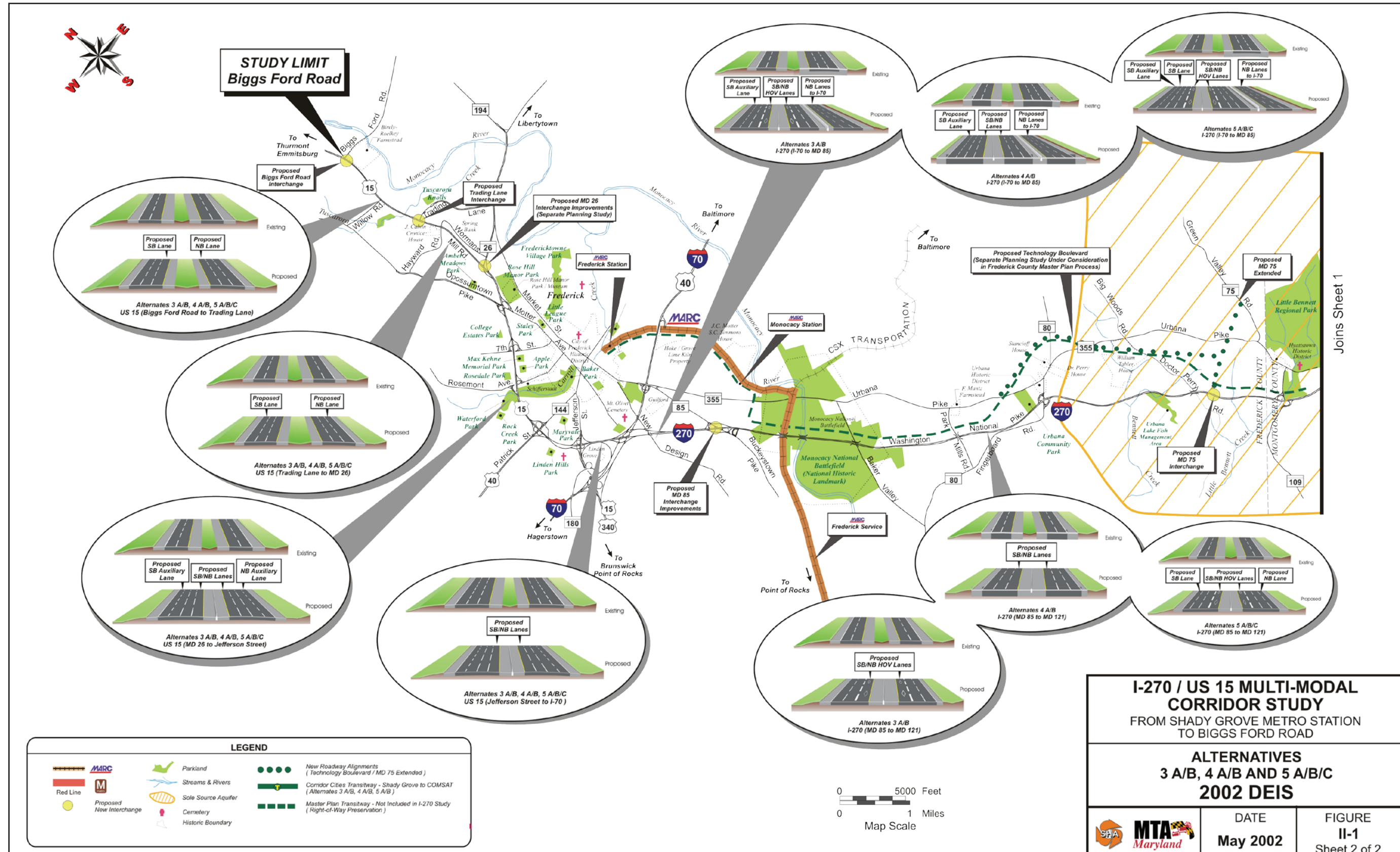
- The highway improvements would include the following:
- Between I-370 and Father Hurley Boulevard, I-270 would have three GP lanes and one HOV lane in each direction, barrier-separated from CD and auxiliary lanes as necessitated by projected traffic volumes. GP lanes would be separated from HOV lanes by striping.



Figure II-1: Alternatives 3A/B, 4A/B, and 5A/B/C 2002 DEIS



### Figure II-1: Alternatives 3A/B, 4A/B, and 5A/B/C 2002 DEIS





**LEGEND**

- Proposed Transitway Station (Included in Model)
- Proposed Transitway Station (Master Plan - Beyond 2025)
- ▤ Proposed Parking Facility
- Proposed Transitway Alignment
- ▭ Potential Yard & Shop Facility Location

**I-270 / US 15 MULTI-MODAL CORRIDOR STUDY**  
FROM SHADY GROVE METRO STATION TO BIGGS FORD ROAD

**CORRIDOR CITIES TRANSITWAY AND POTENTIAL O & M SITES (2002 DEIS)**

**SCALE**  
0 2500 5000 FEET  
0 0.25 0.5 0.75 1 MILE

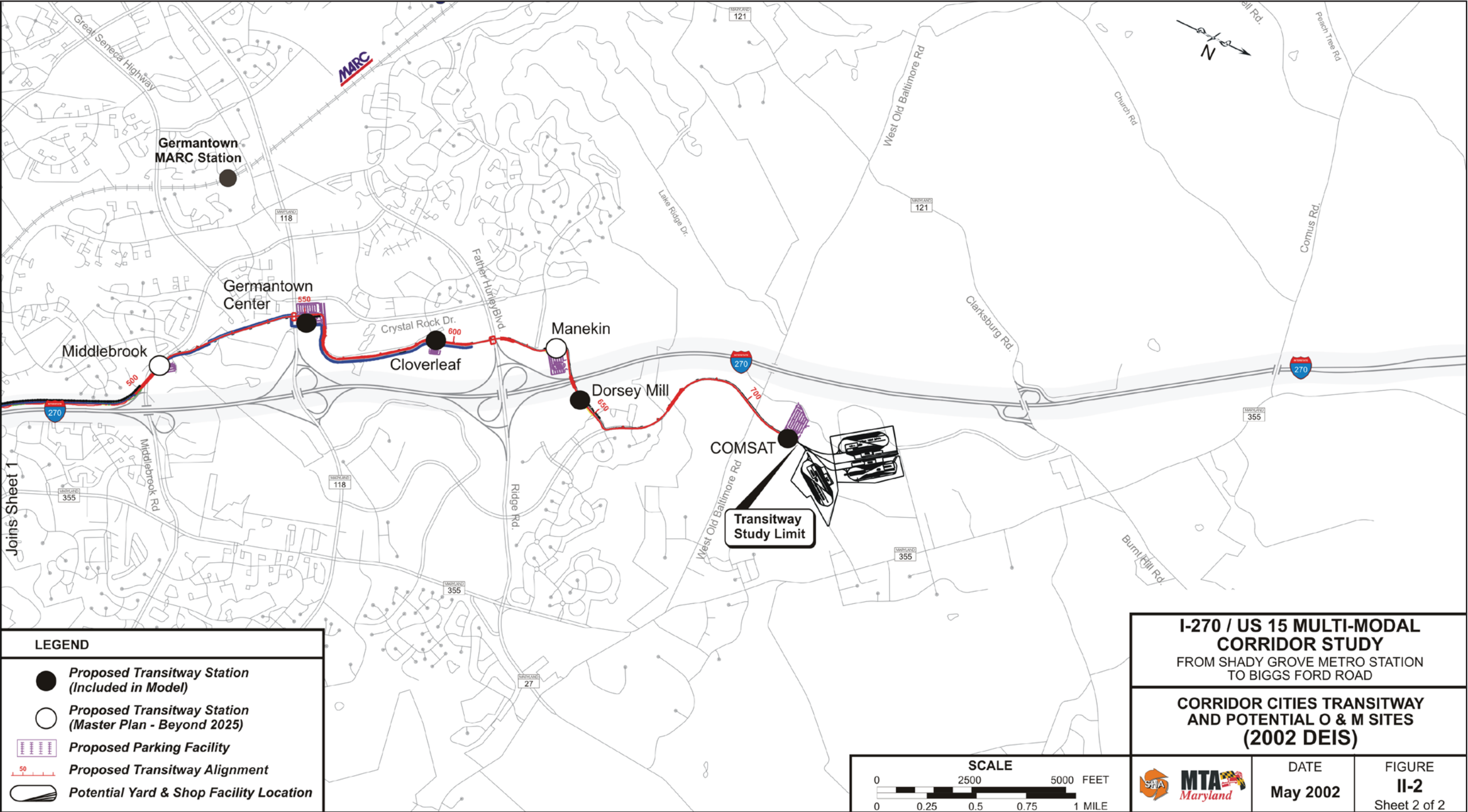
**DATE**  
May 2002

**FIGURE**  
II-2  
Sheet 1 of 2

**Map Labels:** DANAC, Discoverly, School Drive, Quince Orchard Park / Sioux Lane, NIST, First Field, Metropolitan Grove MARC Station, Washingtonian, Crown Farm, West Gaither, East Gaither, Shady Grove Metro Station, Gaithersburg MARC Station, Washington Grove MARC Station, Red Line, CSX, MARC, MTA Maryland, SHA, DATE, FIGURE, II-2, Sheet 1 of 2.



Figure II-2: Corridor Cities Transitway and Potential O&M Sites







- Between Father Hurley Boulevard and MD 121, I-270 would have four GP lanes and one HOV lane in each direction, with GP lanes separated from HOV lanes by striping.
- From MD 121 to MD 85, I-270 would have two GP lanes and one HOV lane in each direction, with GP lanes separated from HOV lanes by striping.
- From MD 85 to I-70, I-270 would have two GP lanes and one HOV lane in each direction, with GP lanes separated from HOV lanes by striping. An auxiliary lane would be provided in the southbound direction, while a barrier-separated, three-lane ramp to I-70 would be provided in the northbound direction.
- Between I-70 and Biggs Ford Road, US 15 would have three GP lanes in each direction. An auxiliary lane would extend in both directions between Jefferson Street and MD 26.

Ramps providing direct access to the HOV lanes would be provided at the proposed Newcut Road and Watkins Mill Road interchanges to facilitate movements by buses and autos to transit stations at COMSAT and Metropolitan Grove.

New interchanges are proposed at I-270/Newcut Road, I-270/MD 75 Extended, US 15/ Trading Lane (now Monocacy Boulevard/Christopher’s Crossing), and at US 15/Biggs Ford Road. Existing interchanges will be modified to accommodate all traffic movements and the improved highway section. Three park and ride lots are included in Alternatives 3A/B, located at US 15/MD 26, US 15/Monocacy Boulevard, and US 15/Biggs Ford Road.

The transit component of Alternatives 3A and 3B would provide either light rail or bus rapid transit on the CCT. Thirteen new station locations were initially identified for construction to service employment and mixed-use centers, with a proposed combined parking capacity of 4,500 to 5,150 spaces. Four additional future station locations were identified. Station locations include:

- Shady Grove Metrorail (existing station with over 5,800 parking spaces)
- East Gaither
- West Gaither
- Washingtonian

- Crown Farm (future station)
- DANAC
- Decoverly
- School Drive
- Quince Orchard Park/Sioux Lane
- NIST
- First Field (future station)
- Metropolitan Grove
- Middlebrook (future station)
- Germantown Center
- Cloverleaf
- Manekin (future station)
- Dorsey Mill
- COMSAT

An Operations and Maintenance (O&M) facility for servicing light rail or bus vehicles would be located in one of three identified areas: Shady Grove, Metropolitan Grove, or COMSAT. A shared use hiker/biker trail would also be constructed adjacent to the CCT.

Alternatives 4A and 4B

Alternatives 4A and 4B include Alternative 2 TSM/ TDM and would add GP lanes, HOV lanes, auxiliary lanes, and direct access ramps along I-270 and GP lanes and auxiliary lanes along US 15. Alternative 4A would provide LRT on the CCT from Shady Grove to COMSAT, while Alternative 4B would provide BRT service on the CCT. Alternatives 4A/B are shown on **Figures II-1 (Sheets 1 and 2) and II-2 (Sheets 1 and 2)** and can be reviewed in detail in the 2002 DEIS in Volume 2, Chapter XI.

The highway component of Alternatives 4A/B would be the same for I-270 and US 15 as it is in Alternatives 3A/B, except for the section between MD 121 and MD 85. From MD 121 to MD 85, Alternatives 4A/B would have three GP lanes in each direction instead of two.

The transit component for Alternatives 4A/B is identical to the transit component for Alternatives 3A/B.

Alternatives 5A, 5B and 5C

Alternatives 5A, 5B, and 5C would add GP lanes, HOV lanes, auxiliary lanes, and direct access ramps along I-270 and GP lanes and auxiliary lanes along US 15. The highway component would be the same as Alternatives 3A/B, except for the section between MD 121 and I-70.

- Between MD 121 and MD 85, Alternative 5 would have three GP lanes and one HOV lane in each direction, with GP lanes separated from HOV lanes by striping. The HOV lanes would terminate at the proposed direct access ramps to/from MD 85.
- Between MD 85 and I-70, I-270 would have four GP lanes in each direction. An auxiliary lane would be provided in the southbound direction, while a barrier-separated, three-lane ramp to I-70 would be provided in the northbound direction.

Direct access ramps to HOV lanes would be provided at the proposed Watkins Mill Road (a separate SHA planning effort) and Newcut Road interchanges, as well as at the I-370, MD 118 and MD85 interchanges.

Alternative 5A would provide LRT on the CCT from Shady Grove to COMSAT, while Alternative 5B would provide BRT service on the CCT. Alternative 5C would replace the CCT with Premium Bus service operating on the highway HOV lanes. Alternatives 5A/B/C are shown on **Figures II-1 and II-2** and can be reviewed in detail in the 2002 DEIS in Volume 2, Chapter XI.

New Alternatives Being Evaluated for the Environmental Assessment

As stated in Chapter I, this document is an Alternatives Analysis (AA) and an Environmental Assessment (EA). The EA is used to evaluate the environmental impacts of the proposed highway and transit improvements of the alternatives and to make an informed selection of a Locally Preferred Alternative. The alternatives being evaluated by the EA are shown in **Table II-2**. Five alternatives are listed; four of these alternatives, Alternatives 6A, 6B, 7A, and 7B, are being evaluated for resource impacts in this document. Alternatives 6A/B and 7A/B include ETLs instead of HOV lanes as the managed lane component, plus the LRT or BRT transit mode on the CCT as the transit component. Alternative 1: No-Build is carried forward from the 2002 DEIS and is updated to reflect the latest demographic forecasts from the Metropolitan Washington Council of Governments (MWCOCG) and the latest planned transportation improvements in the MWCOCG Constrained Long Range Plan (CLRP).

Alternatives 6A and 6B

The highway component of Alternatives 6A and 6B would add GP lanes, ETLs, auxiliary lanes, and direct

Table II-2: Alternatives Considered for the EA Analysis

ALTERNATIVE	DESCRIPTION
1: No-Build	No-Build Alternative carried from the 2002 DEIS; includes latest Metropolitan Planning Organization (MPO) demographic forecasts
6A	Master Plan <sup>1</sup> ETL/LRT Alternative
6B	Master Plan <sup>1</sup> ETL/BRT Alternative
7A	Enhanced <sup>2</sup> Master Plan ETL / LRT Alternative
7B	Enhanced <sup>2</sup> Master Plan ETL / BRT Alternative

<sup>1</sup>Master Plan refers to alignments along I-270 & US 15 included in current Frederick and Montgomery County approved master plans.  
<sup>2</sup>Enhanced Master Plan refers to proposed improvements that are greater than called for in the Montgomery County Clarksburg Area Master Plan.

access ramps along I-270 and GP lanes and auxiliary lanes along US 15. ETLs would terminate north of MD 80 at the open access area south of the Monocacy National Battlefield in Frederick County. Alternative 6A would provide LRT on the CCT from Shady Grove to COMSAT, while Alternative 6B would provide BRT service on the CCT. Alternatives 6A/B are shown on **Figures II-3 (Sheets 1 and 2), II-4 and II-5 on HWY 1 through 15 and MD 75 in Appendix A**.

Between I-370 and north of MD 80, Alternatives 6A and 6B would provide up to two ETLs in each direction in the median lanes, barrier-separated from highway GP lanes and served by direct access ramps at designated interchanges and open access areas. The highway component would provide:

- Four GP lanes and two ETLs in each direction between Shady Grove Road and MD 124.
- Three GP lanes and two ETLs in each direction between MD 124 and proposed Newcut Road.
- Three GP lanes and one ETL in each direction between proposed Newcut Road and MD 121.
- Two GP lanes and one ETL in each direction between MD 121 and north of MD 80, where the ETLs will terminate in the vicinity of Park Mills Road.

### Figure II-3: Alternatives 6A/B and 7A/B

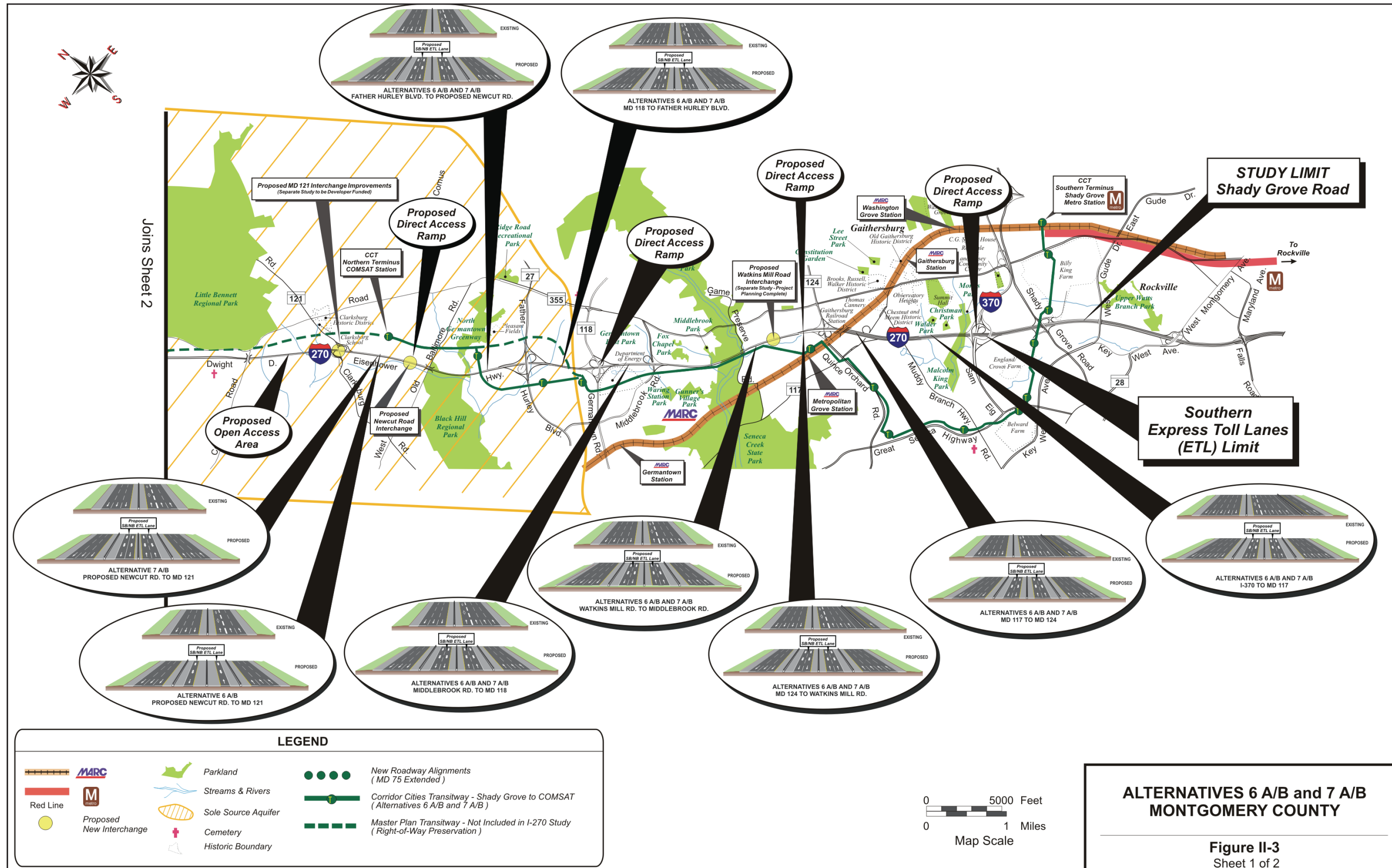
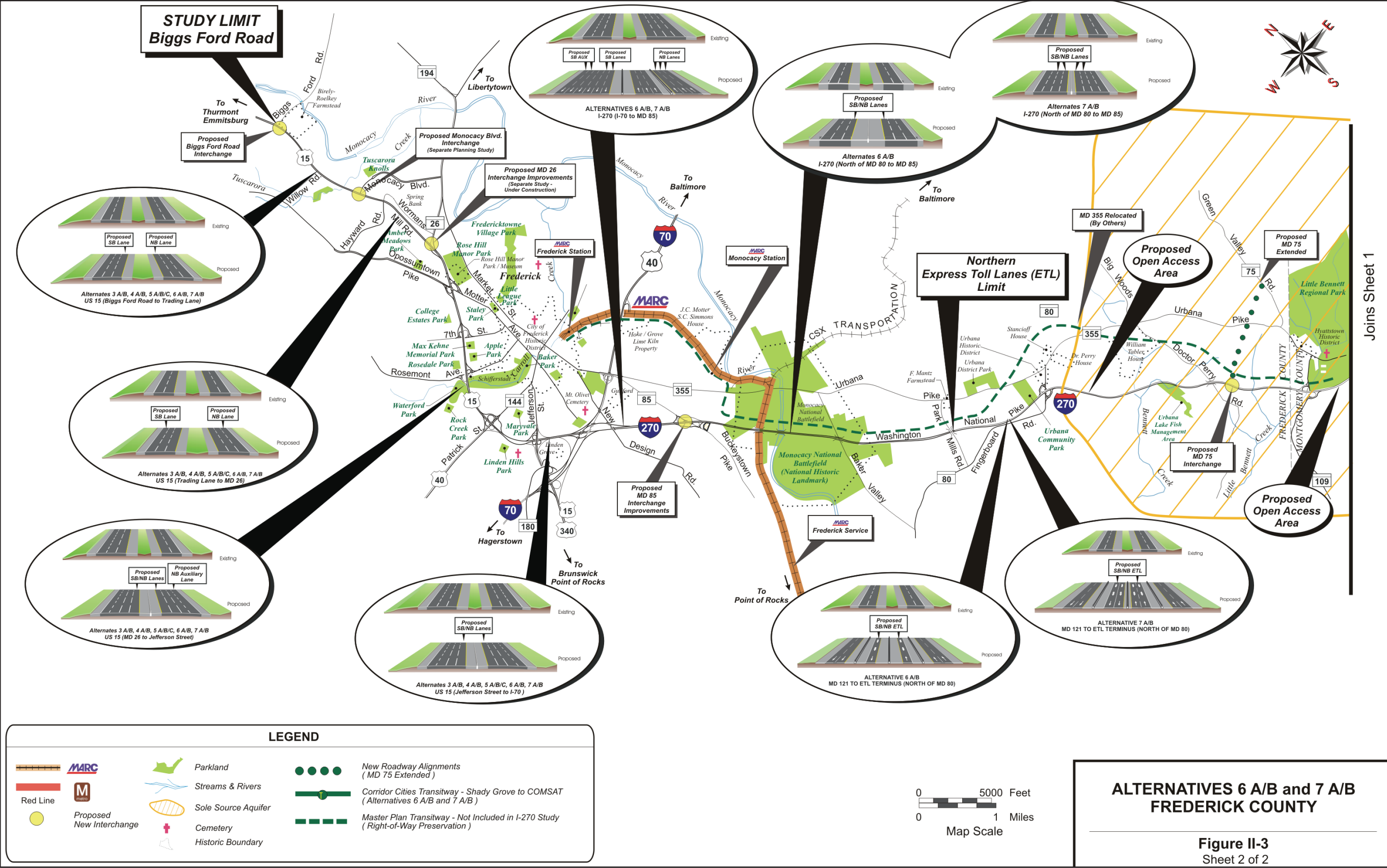




Figure II-3: Alternatives 6A/B and 7A/B





### Figure II-4: Alternatives 6A & 7A Bus Service for LRT Mode

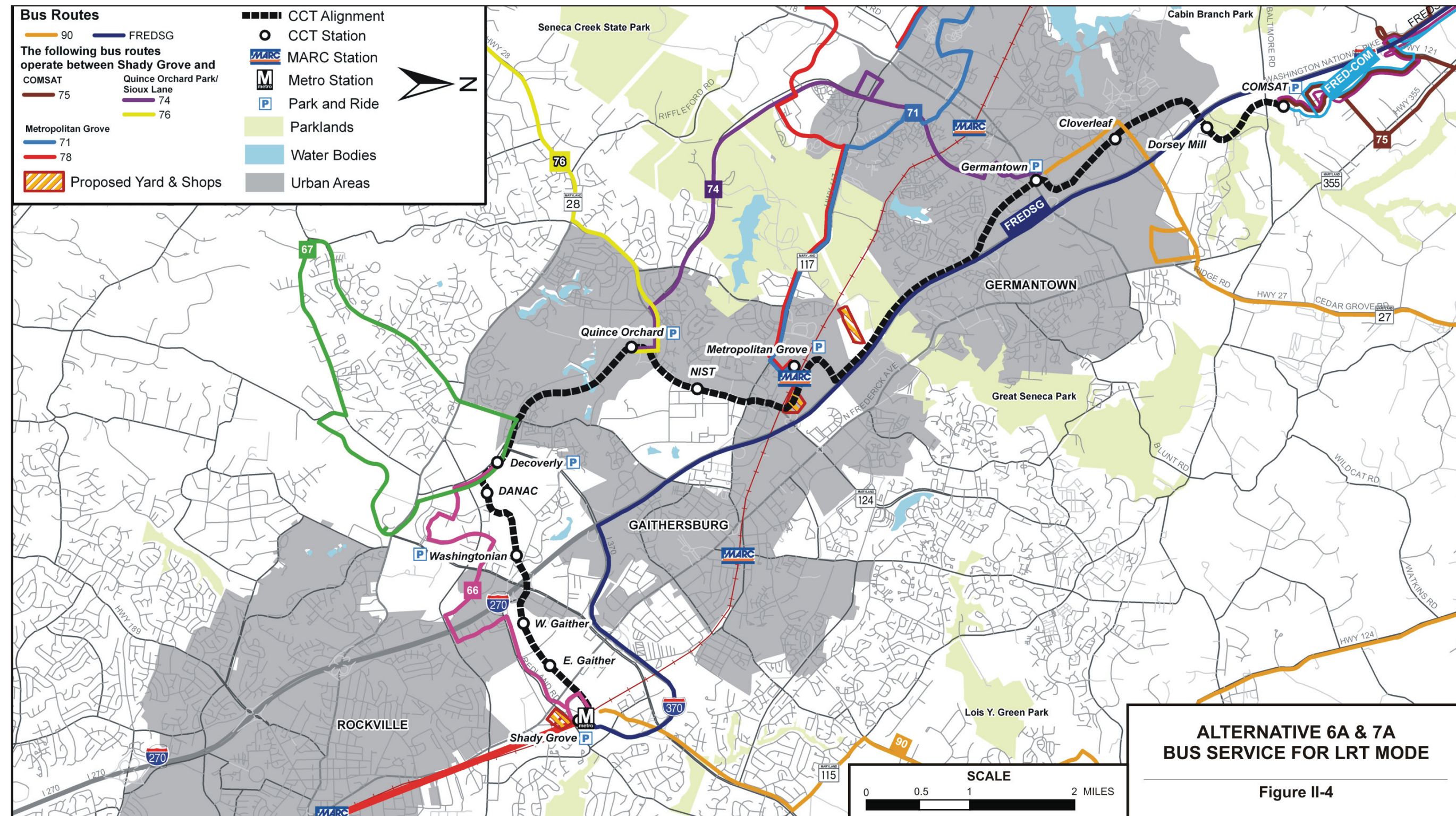
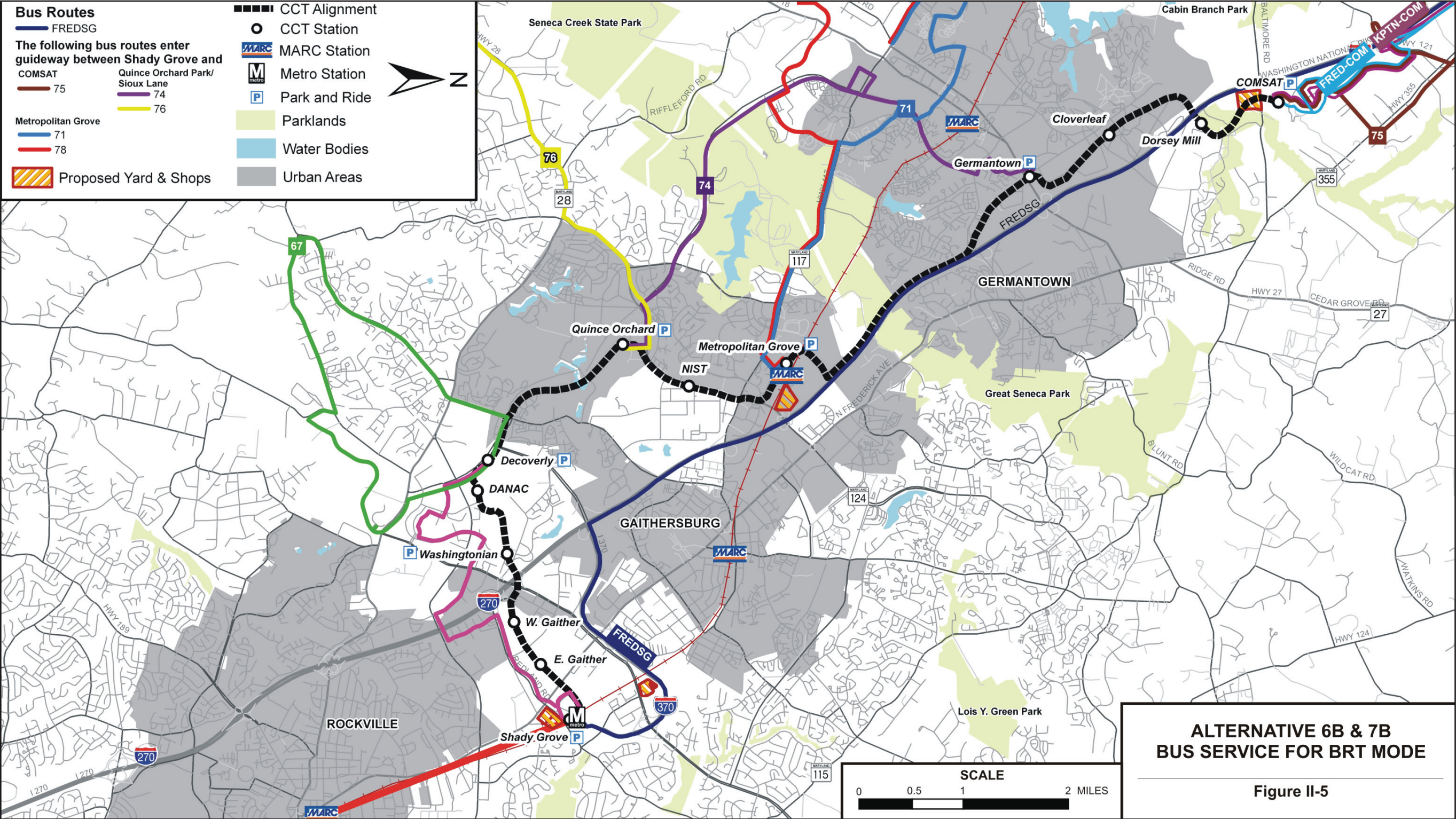




Figure II-5: Alternatives 6B & 7B Bus Service for LRT Mode







• Three GP lanes in each direction from north of MD 80 in the vicinity of Park Mills Road to Biggs Ford Road.

Auxiliary lanes would provide additional travel lanes between interchanges as needed to provide capacity. The typical sections are also shown on **Figure II-3 (Sheets 1 and 2)**.

Direct access ramps for ETLs only would be provided south of I-370 and north of MD 80 at the ETL termini; at the interchanges of I-270 with I-370, MD 118, and proposed Newcut Road; from proposed Metropolitan Grove Road Extended; and via open access ramps between MD 121 and MD 109 and between MD 75 and MD 80.

New interchanges are proposed at I-270/Newcut Road, I-270/MD 75 Extended, and at US 15/Biggs Ford Road. Existing interchanges will be modified to accommodate all traffic movements and the improved highway section. Two interchanges, at I-270/Watkins Mill Road and at US 15/Monocacy Boulevard/Christopher’s Crossing, are being developed by SHA as separate planning projects that should accommodate future changes in the I-270/US 15 roadway. One park and ride lot at US 15 and Biggs Ford Road is included in Alternatives 6A and 6B.

The transit component of Alternatives 6A and 6B would provide either light rail or bus rapid transit on the CCT. Twelve new station locations were identified for initial construction to service employment and mixed-use centers, with a proposed combined parking capacity of 4,700 spaces. Four additional station locations (same as DEIS locations) have been identified that could be developed in the future (after 2030). They have not been included in the travel forecasting in this AA/EA, but the project design will not preclude their future development. Station locations under consideration include:

- Shady Grove Metrorail (existing station with over 5,800 parking spaces)
- East Gaither
- West Gaither
- Washingtonian
- Crown Farm (future station)
- DANAC
- Decoverly

- Quince Orchard
- NIST
- First Field (future station)
- Metropolitan Grove
- Middlebrook (future station)
- Germantown Center
- Cloverleaf
- Manekin (future station)
- Dorsey Mill
- COMSAT

Since the publication of the 2002 DEIS, the MTA has dropped the proposed future School Drive station from further consideration. Montgomery County approved development which, when built, prevented use of the School Drive site for a station.

In addition to transit service on the CCT, transit measures include the following:

- New feeder bus routes to serve the CCT stations.
- New premium bus routes from Frederick County serving major activity centers.
- Park and ride facilities at key CCT stations.
- Interactive transit information at major employment centers in the Corridor and at CCT stations.

In addition to BRT or LRT service, Alternatives 6A and 6B will include premium bus service between Frederick County and corridor park and rides, major activity centers, and transit stations operating on the managed lanes of I-270. These include the FREDSG, FREDMGSG, and KPTNMGSG routes that also appear in Alternative 6.2: Transit TSM.

An O&M facility for servicing light rail or bus vehicles would be located in one of three identified areas: Shady Grove, Metropolitan Grove, or COMSAT. A shared use hiker/biker trail would also be constructed adjacent to the CCT.

**Alternatives 7A and 7B**

Alternatives 7A and 7B would add GP lanes, ETLs, auxiliary lanes, and direct access ramps along I-270 and GP lanes and auxiliary lanes along US 15. ETLs would terminate north of MD 80 at the direct access ramps south of the Monocacy National Battlefield in Frederick County. Alternative 7A would provide LRT

on the CCT from Shady Grove to COMSAT, while Alternative 7B would provide BRT service on the CCT. Alternatives 7A/B are shown on **Figures II-3 (Sheets 1 and 2), II-4 and II-5** on **HWY 1 through 15** and **MD 75** in **Appendix A**.

The highway typical section for Alternatives 7A/B is identical to the section for Alternatives 6A/B except between proposed Newcut Road and north of MD 80. In this section, Alternatives 7A/B would have two ETLs per direction, with a four-foot inside offset to the median barrier.

The transit component of Alternatives 7A and 7B is identical to the transit component of Alternatives 6A and 6B.

**New Alternatives Being Evaluated for the Alternatives Analysis**

An AA is used by the FTA to evaluate different transit investments in order to make an informed selection of a preferred transit mode and alignment. The alternatives being evaluated by the AA are shown in **Table II-3**. Two alternatives, Alternative 6.1: No-Build Transit and Alternative 6.2: Transit TSM, are solely for the assessment of transit performance.

**Alternative 6.1: No-Build Transit**

The highway component of the No-Build Transit Alternative is identical to the highway improvements in Alternative 6A/B. The highway build is included as part of the No-Build Transit Alternative to facilitate the analysis of the transit alternatives. By using an identical highway network baseline in the travel demand modeling of the No-Build Transit, Transit TSM, and transit build alternatives, the analysis is able to isolate the benefits attributable solely to the transit components, without having to compensate for changes in the underlying traffic patterns.

The transit component of Alternative 6.1: No-Build Transit consists of the existing transit services in the corridor plus any improvements programmed in the fiscally constrained long-range transportation plan for the metropolitan Washington region. **Table II-4** summarizes the routes, termini, and frequency of transit services in Montgomery and Frederick Counties for the No-Build Transit Alternative.

**Table II-3: Alternatives Considered in the AA**

ALTERNATIVE	DESCRIPTION
1: No-Build	No-Build Alternative carried from 2002 DEIS; includes latest Metropolitan Planning Organization (MPO) demographic forecasts
6.1: No-Build Transit	Master Plan <sup>1</sup> ETL Alternative 6; no transit improvements beyond CLRP (with CCT removed)
6.2: Transit TSM	Master Plan <sup>1</sup> ETL Alternative 6; with Transit TSM (enhanced bus service)
6A	Master Plan <sup>1</sup> ETL / LRT Alternative
6B	Master Plan <sup>1</sup> ETL / BRT Alternative
7A	Enhanced <sup>2</sup> Master Plan ETL / LRT Alternative
7B	Enhanced <sup>2</sup> Master Plan ETL / BRT Alternative

<sup>1</sup>Master Plan refers to alignments along I-270 & US 15 included in current Frederick and Montgomery County approved master plans.  
<sup>2</sup>Enhanced Master Plan refers to proposed improvements that are greater than called for in the Montgomery County Clarksburg Area Master Plan.

**Alternative 6.2: Transit TSM**

The Transit TSM Alternative serves as the baseline for analyzing transportation performance among the transit alternatives, as required by the FTA. The Transit TSM Alternative represents the best transit service that can be achieved for the purposes of meeting the project Purpose and Need without investing in major capital improvements, such as the construction of an LRT or BRT fixed guideway. The Transit TSM Alternative is designed to provide comparable quality and levels of transit service at lower cost than Alternatives 6A/B, without major investment in a transit fixed guideway and using the same assumptions for the highway network as Alternatives 6A/B. Alternative 6.2 includes the operation of high quality transit service to a comparable level as the CCT, but without the construction of the exclusive transitway.

The highway component of Alternative 6.2 is identical to the highway improvements in Alternative 6A/B. The highway build is included in Alternative 6.2 to isolate the transit improvements and determine the benefits attributable solely to the transit components.





Table II-4: 2030 No-Build Transit Service

ROUTE	CURRENT TERMINALS		2006 HEADWAYS		NOTES	PROPOSED 2030 NO-BUILD HEADWAYS	
	START	END	PEAK	OFF-PEAK		PEAK	OFF-PEAK
43	Travilah Transit Center	Shady Grove	15	20		15	20
54	Lake Forest	Rockville	20	30		15	30
55	Germantown Transit Center	Rockville	15	30		10	20
56	Lake Forest	Rockville	20	30		15	30
61	Germantown Transit Center	Shady Grove	30	30		15	30
63	Shady Grove	Rockville	30	30		20	30
66	Travilah Transit Center	Shady Grove	30	–	off-peak direction only	20	30
67	Travilah Transit Center	Shady Grove	30	–	peak direction only	20	30
70	Milestone	Bethesda Medical Center	15	–	not all stops	15	
71	Kingview Park and Ride	Shady Grove	30	–	peak direction only	20	
74	Germantown Transit Center	Shady Grove	30	30		20	30
75	Urbana	Germantown Transit Center	30	30	not all stops in off-peak	20	30
76	Poolesville	Shady Grove	30	–	not all stops in off-peak	20	30
78	Kingview Park and Ride	Shady Grove	30	–	peak direction only	20	–
79	Milestone	Shady Grove	30	–	peak direction only	20	–
82	Clarksburg	Germantown Transit Center/DOE	30	–	peak direction only	20	–
83	Milestone	Germantown Transit Center	15	30	MARC station in peak	15	30
90	Milestone	Shady Grove	30	30	different routings throughout day	20	30
97	Germantown Transit Center	Germantown MARC	15	30	loop	15	30
98	Germantown Transit Center	Seabreeze Court	15	30	loop	15	30
100	Germantown Transit Center	Shady Grove	5	15	express via I-270	5	15
124	Rt 124 Park and Ride (Rt 117 Park and Ride)	Shady Grove	30	–	express via I-270	20	–

Table II-4: 2030 No-Build Transit Service (continued)

ROUTE	CURRENT TERMINALS		2006 HEADWAYS		NOTES	PROPOSED 2030 NO-BUILD HEADWAYS	
	START	END	PEAK	OFF-PEAK		PEAK	OFF-PEAK
MTA 991	Hagerstown	Shady Grove/Rock Spring Park	15	–		15	–
FT10	Frederick Towne Mall	Francis Scott Key Mall	30	40		30	40
FT20	Francis Scott Key Mall	Frederick Transit Center	30	60		30	60
FT30	Frederick Towne Mall	Frederick Transit Center	30	60	loop	30	60
FT40	Frederick Towne Mall	Frederick Transit Center	30	60		30	60
FT50	Frederick Towne Mall	Frederick Transit Center	30	60	loop	30	60
FT60	Frederick Community College	Frederick Transit Center	30	60	loop	30	60
FT70	College Park Plaza	Frederick Transit Center	60	60	loop	60	60
FT80	Frederick Community College	Frederick Towne Mall	30	60		30	60
FT-EC Shuttle	Spring Ridge Apartments	Department of Aging			4 round trips/day		
FT-BJ Shuttle	Frederick Transit Center	Brunswick MARC Station	180	–	4 round trips/day	180	–
FT-ET Shuttle	Emmitsburg	Frederick Transit Center	120	–	2 round trips/day	120	–
FT-85 Shuttle	Bowmans Industrial Park	Frederick Transit Center			2 round trips/day		
FT-POR Shuttle	Frederick Shopping Center	Point of Rocks MARC Station	40		peak direction only	40	
FT-Fd/ MARC Shuttle	Frederick Towne Mall	Frederick Transit Center	60	–	peak direction only	60	–
FT-Walk/ MARC Shuttle	Walkersville	Frederick Transit Center	60	–	peak direction only	60	–
FT-Walk Shuttle	Walkersville	Frederick Transit Center	60	120		60	120



Table II-5: Alternative 6.2: Transit TSM Additions to No-Build Transit Service

ROUTE	TERMINALS		PROPOSED ALTERNATIVE 6.2: TRANSIT TSM HEADWAYS	
	START	END	PEAK	OFF-PEAK
FREDSG	Frederick Transit Center	Shady Grove	15	–
FREDMGSG	Frederick Transit Center	Shady Grove	20	30
KPTNMGSG	Kemptown	Shady Grove	30	–
COM-MGSG	COMSAT	Shady Grove	6	10

The transit TSM measures in this alternative include the following:

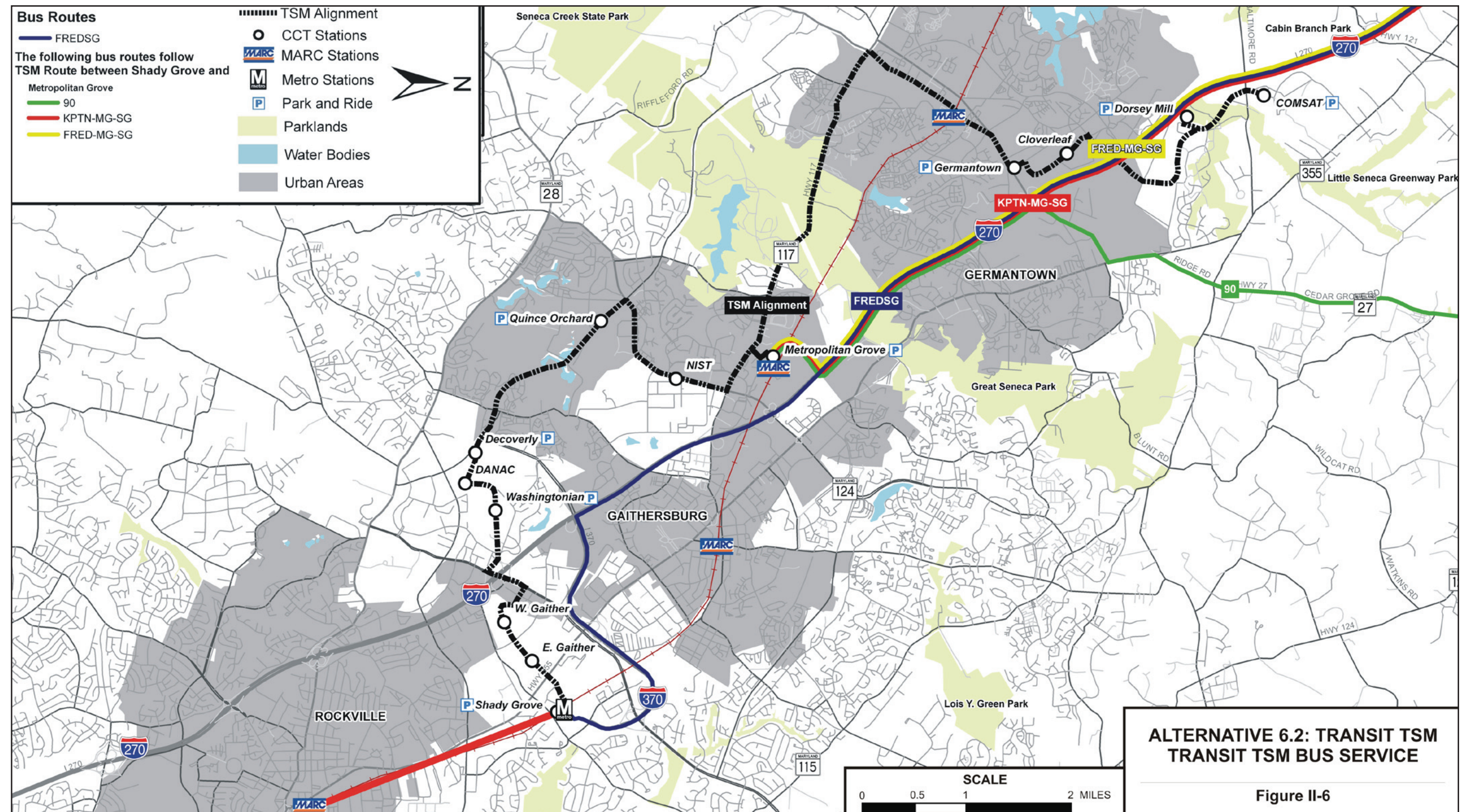
- New premium bus service operating on local roads and serving stops comparable to CCT transit stations.
- New stations and park and ride facilities in the same locations as proposed for Alternatives 6A and 6B.
- New limited stop bus route to serve those stations.
- Premium bus service from Fredrick County to major activity centers using managed lanes with direct access ramps to park and ride lots, major activity centers and transit stations.
- Enhanced feeder bus service to Metrorail and MARC stations.
- Interactive transit information at major employment centers in the Corridor.

*Figure II-6* presents the stations and bus services, while *Table II-5* describes the new bus routes, where they start and end, and their frequency of service for the Transit TSM Alternative. In addition to the new limited stop bus route providing service to the proposed stations, new service is also proposed from Frederick County to the Shady Grove Metrorail station and to the CCT area in Gaithersburg.

The primary improvement in Alternative 6.2: Transit TSM is the construction of new station facilities that are connected via a new limited stop bus route between the Shady Grove Metrorail station and COMSAT. This bus route would operate on existing streets at a peak headway of six minutes (busiest travel times) and a non-peak headway of ten minutes. Headway is the interval of time between buses.



### Figure II-6: Alternative 6.2: Transit TSM Bus Service











# Transportation Facilities, Services and Mobility Impacts

## Purpose

This chapter discusses and evaluates the transportation and traffic impacts of the No Build, Transportation Systems Management (TSM) and proposed build alternatives for the I-270/US 15 Multi-Modal Corridor Study. The chapter is organized to present information on public transportation, build alternatives, roadway network effects, highway and multi-modal conclusions.

## Public Transportation

The effectiveness of transit service is dependent upon several factors including geographic coverage, hours of operation and frequency of service, door-to-door travel times, travel time reliability, number and convenience of transfers, ride comfort, and safety.

Alternative 6.2, the Transit-TSM Alternative, and build Alternatives 6A and 7A Light Rail Transit (LRT) and 6B and 7B Bus Rapid Transit (BRT) described in **Chapter II** propose to improve service in the corridor in a number of ways, including:

- More frequent service
- Faster service
- Improved reliability and ride quality
- High quality station and stop amenities, including real-time transit information

The demand forecasting analysis conducted to determine potential transit ridership in the corridor used the highway build condition (Alternative 6) as its basis. This allowed technical analysis performed for this report to be consistent with the conservative approach to ridership estimating for the transit modes. Under Alternative 6.1, the No-Build Transit Alternative, north-south transit service would continue to be provided by buses traveling in mixed traffic except along I-270 where transit service could take advantage of the Express Toll Lanes<sup>SM</sup> (ETLs<sup>SM</sup>) and the free-flow traffic conditions. Peak hour travel times would be slower than today in many areas due to the projected growth in traffic volumes and congestion on major roads. Alternative 6.2: Transit TSM also assumes that the highway components of Alternative 6A/B are completed along with transit components as described in **Chapter II**.

## Existing Conditions

Table III-1: Existing Transit Service

ROUTE	TERMINAL POINTS	
Ride On 43	Traville Transit Center	Shady Grove
Ride On 54	Lake Forest	Rockville
Ride On 55	Germantown Transit Center	Rockville
Ride On 56	Lake Forest	Rockville
Ride On 61	Germantown Transit Center	Shady Grove
Ride On 63	Shady Grove Metrorail	Rockville
Ride On 66	Traville Transit Center	Shady Grove
Ride On 67	Traville Transit Center	Shady Grove
Ride On 70	Milestone	Bethesda/Med Center
Ride On 71	Kingview Park and Ride	Shady Grove
Ride On 74	Germantown Transit Center	Shady Grove
Ride On 75	Urbana	Germantown Transit Center
Ride On 76	Poolesville	Shady Grove
Ride On 77	Germantown Commons	Shady Grove
Ride On 78	Kingview Park and Ride	Shady Grove
Ride On 79	Milestone	Shady Grove
Ride On 82	Clarksburg	Germantown Transit Center /DOE
Ride On 83	Milestone	Germantown Transit Center
Ride On 90	Milestone	Shady Grove

ROUTE	TERMINAL POINTS	
Ride On 97	Germantown Transit Center	Germantown MARC
Ride On 98	Germantown Transit Center	Seabreeze Court
Ride On 100	Germantown Transit Center	Shady Grove
Ride On 124	MD 124 Park and Ride	Shady Grove
MTA 991	Hagerstown	Shady Grove/Rock Spring Pike
MARC Brunswick Line	Martinsburg, West Virginia	Washington Union Station
Frederick Translt 10	Frederick Towne Mall	Francis Scott Key Mall
Frederick Translt 20	Francis Scott Key Mall	Frederick Transit Center
Frederick Translt 30	Frederick Towne Mall	Frederick Transit Center
Frederick Translt 40	Frederick Towne Mall	Frederick Transit Center
Frederick Translt 50	Frederick Towne Mall	Frederick Transit Center
Frederick Translt 60	Frederick Community College	Frederick Transit Center
Frederick Translt 70	College Park Plaza	Frederick Transit Center
Frederick Translt - EC Shuttle	Frederick Community College	Frederick Town Mall
Frederick Translt - BJ Shuttle	Frederick Transit Center	Brunswick MARC Station

ROUTE	TERMINAL POINTS	
Frederick Translt - ET Shuttle	Emmitsburg	Frederick Transit Center
Frederick Translt - BS Shuttle	Bowmans Industrial Park	Frederick Transit Center
Frederick Translt - POR Shuttle	Frederick Shopping Center	Point of Rocks MARC
Frederick Translt Frederick MARC Shuttle	Frederick Town Mall	Frederick Transit Center
Frederick Translt - Walk/MARC Shuttle	Walkersville	Frederick Transit Center
Frederick Translt - Walk Shuttle	Walkersville	Frederick Transit Center

As of 10/2/2006

The north-south corridor is served by a variety of transit services, including local bus, commuter bus, and commuter rail. Washington Metropolitan Area Transit Authority (WMATA), Montgomery County Ride On, Frederick TransIT, and Maryland Transit Administration (MTA) today provide transit service throughout much of Montgomery County, with commuter bus service extending into Frederick and Washington counties and commuter rail service that extends into Frederick County, terminating in Martinsburg, West Virginia. There is not one transit route or service that currently serves both the entire length of the corridor of the Corridor Cities Transitway (CCT) or its proposed set of destinations. **Table III-1** above identifies transit services currently in operation in the study area.

The proposed transit services within the CCT corridor



Table III-2: Transit Service Hours of Operation

TRANSIT SERVICE	WEEKDAY		WEEKEND
	STARTS	ENDS	
Metrorail	5:00 a.m.	12:00 a.m.	7:00 a.m.-3:00 a.m.
MARC	4:30 a.m.	10:30 p.m.	No service
Local Bus	4:30 a.m.	12:30 a.m.-2:00 a.m.	6:00 a.m.-1:00 a.m.

will operate during the same time periods as other regional services, which presently operate as shown in **Table III-2**. Many bus routes operate on a variable schedule depending on destination and time of day, and some routes do not offer weekend service. Express buses usually operate only during weekday peak periods.

Proposed Transit Improvements

Proposed transit improvements for the CCT are described in **Chapter II** of this document.

With Alternative 6.2, a new express bus route provides service the length of the corridor using the alignment described in **Chapter II** from Shady Grove to COMSAT. Rather than using a separate guideway, Alternative 6.2 would travel along Shady Grove Road, MD 117, MD 118, Crystal Rock Drive, MD 27, MD 355, and other key roadways. The service would be operated with six-minute headways during the peak period and 11-minute headways in the off-peak.

In the LRT Alternatives 6A and 7A, the light rail guideway would include double track operation following the alignment specified in **Chapter II** of this document and travel generally northwest from Shady Grove to COMSAT. Light rail trains would operate between the two terminal stations at Shady Grove and COMSAT and provide service to all stations in between.

In the BRT Alternatives 6B and 7B, the service would travel along the same guideway alignment identified for the LRT using a guideway that would maintain complete separation from existing roadway traffic and provide direct service to all stations.

This exclusive transit alignment is referred to as the *trunkline*. The new trunkline transit associated for all three of the transit alternatives would augment existing

bus routes and nearly double service and capacity in the corridor, improving total system capacity and reliability with frequent and more extensive service throughout the I-270 Corridor. Reliability of the trunkline trips would be enhanced with signal priority at major signalized intersections, and transit would be more predictable through the availability of interactive real-time transit information at stations.

Service Quality

Quality of transit service can be an important factor influencing transit ridership. System users who perceive a transit service to be comfortable, convenient, and reliable are more likely to choose that service as their primary form of travel for a given trip.

Low-floor articulated 60-foot long buses will be used for the trunkline service associated with Alternative 6.2 and BRT services included in Alternatives 6B and 7B. These buses will provide a higher capacity than standard buses (90 passengers per bus versus 60 passengers per bus for standard buses), and should enhance the service quality with more comfortable seating and a smoother ride. The light rail vehicles used for alternatives 6A and 7A would also provide more comfortable seating and a smoother ride than typical bus vehicles. Both BRT and LRT services would benefit from faster boardings and alightings than experienced on typical bus services due to the use of multiple doors and remote fare collection.

The transit trip quality would also be enhanced by reducing wait times and by making station facilities more comfortable. More frequent transit service is proposed with Alternatives 6.2, 6A/B and 7A/B, as shown in **Table III-3**. New stations with enhanced amenities, such as shelters, seating, and NextBus information displays, are proposed in these alternatives

as well. These stations are also being designed with improvements in pedestrian, park and ride, and car drop-off access to make the trip to the transit station safer and more pleasant, as well as more accessible.

Feeder Bus Service

To extend the reach of the trunkline service into surrounding neighborhoods, Alternatives 6.2, 6A/B and 7A/B each propose modifications to existing area bus routes to bring passengers to the higher-speed trunkline service.

With Alternatives 6A and 7A, several existing bus routes (Ride On routes 66, 67, 71, 74, 75, 78, and 90) would be re-routed to terminate at an LRT station, allowing passengers to easily transfer from bus to LRT. With Alternatives 6B and 7B, the guideway would be used at various stages to provide access for local bus operation. Some local bus service would continue to operate along streets next to which the guideway is located to serve local bus stops, while others would utilize the CCT to provide more express service.

Transit service on other bus lines, MARC and Metrorail are generally assumed to operate the same in all five alternatives (6.2, 6A, 6B and 7A, 7B). Some changes may be made to take advantage of the higher speed and reliability of the LRT or BRT service on the CCT corridor, and many passengers should experience improved service. Minor route changes may make transfers easier. For example, transit schedules may be modified, or local bus stops may be added to drop passengers off closer to the new CCT stations. Any proposed changes to existing routes will follow required

procedures as specified by MTA, WMATA or Ride On, including public involvement.

Travel Times

Each alternative provides specific improvements to reduce north-south transit travel times along the CCT corridor, including dedicated guideway, traffic signal priority, and improved boarding times.

As would be expected, a dedicated right-of-way which provides more direct connectivity results in travel times that are reduced over similar travel between the same destinations on roadways taking a more circuitous route on exiting roadways. **Table III-4** provides a sample of station-to-station travel times for each of the alternatives.

Build Alternatives

Growth in transit ridership is an important measure of success for transit projects. The more riders an alternative can attract, the better it is doing its job of providing improved system mobility. Travel demand modeling provides a number of ways to look at the ridership impacts of a change in transit service. This section summarizes:

- Daily ridership on the CCT
- New transit riders
- Transit boardings at CCT stations
- Transit user benefits (travel time savings)

Table III-3: Transit Service Headways

ALTERNATIVE	PEAK PERIODS (MINUTES)	OFF-PEAK PERIODS (MINUTES)
Alternative 6.1: No-Build Transit	*	*
Alternative 6.2: Transit TSM	6	11
Alternatives 6A/7A (LRT)	7.5	12
Alternative 6B/7B (BRT)	3	8

Note that BRT service is more frequent than LRT service to compensate for the greater number of passengers that can be carried on an LRT vehicle.

\* No comparable service assumed for the No-Build-Transit.





Table III-4: Sample Station to Station Travel Times in 2030 (Peak Period)

ALTERNATIVE	COMSAT TO SHADY GROVE	COMSAT TO GERMANTOWN	GERMANTOWN TO NIST	NIST TO DANAC	DANAC TO SHADY GROVE
Alternative 6.2: Transit TSM	60 min	11.3 min	19.9 min	11.8 min	16.6 min
Alternative 6A/7A (LRT)	36 min	10.6 min	9.1 min	8.3 min	8.1 min
Alternative 6B/7B (BRT)	38 min	11.1 min	9.3 min	8.6 min	8.9 min

Note: Travel times reflect travel and station dwell times. Overall travel corridor travel times for LRT are marginally faster but station-to-station times depend on operational conditions.

Daily Ridership

**Table III-5** summarizes the 2030 daily transitway ridership as well as new transit trips. New transit trips show the number of new transit riders. Some riders of the CCT will be people who would take bus transit if the CCT were not built. Others are individuals who might not have made a trip, or who would have used their car instead. Calculating new transit riders is especially important for measuring how well an alternative can achieve the air quality goals outlined in **Chapter I**.

Table III-5: CCT Transitway Ridership

ALTERNATIVE	TOTAL DAILY GUIDEWAY BOARDINGS	DAILY NEW TRANSIT TRIPS VS. NO BUILD
Alternative 6.2: Transit TSM	7,000	7,600
Alternative 6A	30,000	16,300
Alternative 6B	26,000	16,900
Alternative 7A	30,000	16,400
Alternative 7B	27,000	17,000

As shown in **Table III-5**, the investment in a dedicated right-of-way, such as a light rail or bus rapid transitway, should result in greater numbers of new passengers taking advantage of faster travel times and improved reliability. Alternatives 6A and 7A, each providing LRT

service, have the highest ridership; however, Alternatives 6B and 7B also experience higher new transit trips.

Transit Demand by Station

Daily transit boardings by station are summarized in **Table III-6**. While all stations receive walkup patrons, the greatest peak period boarding volumes are typically at those stations providing major park and ride facilities and feeder bus service, such as COMSAT station, Germantown station, and Quince Orchard station, and stations where major transfers occur, such as the Shady Grove Metrorail station.

Transit patrons will generally walk to a rail station when the distance does not exceed ¼ to ½ of a mile.

Transit User Benefits

In addition to new transit trips, user benefit hours are another measure of potential benefits that can be expected with transit improvements in a corridor. User benefit hours is a measure of the time saved by all transit passengers, those existing passengers who experience a faster trip, as well as new passengers. User benefit hours are used in the calculation of cost effectiveness, described later in **Chapter VI**.

Not surprisingly, the alternatives with the faster travel times (Alternatives 6A, 6B, 7A, and 7B) provide the highest level of user benefits. **Table III-7** summarizes the user benefit hours compared to Alternative 6.2.

Table III-6: Daily CCT Station Boardings

STATION NAME	ALTERNATIVE 6.2: TRANSIT TSM	ALTERNATIVE 6A	ALTERNATIVE 6B	ALTERNATIVE 7A	ALTERNATIVE 7B
COMSAT	130	2,625	1,230	2,620	1,530
Dorsey Mill	200	585	520	595	530
Cloverleaf	440	800	685	790	680
Germantown	770	2,915	2,235	2,860	2,215
Metropolitan Grove	600	2,215	2,210	2,435	2,180
NIST	685	635	1,305	630	1,215
Quince Orchard	515	2,870	2,495	2,795	2,375
Decoverly	315	1,135	925	1,155	930
DANAC	330	990	595	990	600
Washingtonian	565	2,735	2,705	2,785	2,800
West Gaither	830	2,635	2,755	2,645	2,765
East Gaither	495	930	900	930	900
Shady Grove	1,580	9,060	7,930	9,130	8,180
Total	7,445	30,135	26,490	30,365	26,905

Table III-7: Daily and Annual User Benefit Hours

ALTERNATIVE	INCREASE IN DAILY USER BENEFITS OVER NO BUILD	INCREASE IN DAILY USER BENEFITHOURS OVER ALTERNATIVE 6.2	ANNUAL USER BENEFIT HOURS VS. ALTERNATIVE 6.2
Alternative 6.2: Transit TSM	6,300	—	—
Alternative 6A	13,200	6,900	2,070,000
Alternative 6B	13,700	7,400	2,200,000
Alternative 7A	13,300	7,000	2,100,000
Alternative 7B	13,800	7,500	2,250,000



Traffic on I-270

Roadway Network Effects

The I-270 and US 15 traffic operations for Alternatives 1 (No-Build), 6A/B and 7A/B are presented in this section using the highway forecast volumes produced by the Metropolitan Washington Council of Governments (MWCOC) model (Version 2.1D#50). The I-270 and US 15 forecasted traffic volumes reflect the predicted conditions for year 2030 with future programmed transportation facilities. These facilities, such as the Intercounty Connector (ICC) among others, are listed in the MWCOC 2007 Constrained Long Range Plan (CLRP) (see also **Chapter I, Table I-1**). The ICC, currently under construction, will be a fully-tolled, six-lane freeway connecting I-270 and I-95. The I-270 connection to the ICC will occur via the I-370 interchange. The Maryland Department of Transportation (MDOT), in cooperation with MWCOC and through its modal agencies, Maryland State Highway Administration (SHA) and the Maryland Transportation Authority (MDTA), has been advancing feasibility studies of a Managed Lanes Network system that would operationally connect managed lanes of several facilities. The ICC, I-270 north and south of I-370, and I-95/I-495 (Capital Beltway) in Maryland would connect with Virginia’s I-495 (Capital Beltway) High Occupancy Toll (HOT) lanes, serving as the initial steps toward a Washington, DC-area Managed Lanes Network. The network would provide regional

connectivity and managed lanes continuity while assisting to alleviate regional congestion. The I-270 ETLs included in Alternatives 6A/B and 7A/B forms the northern portion of the Managed Lanes Network.

Traffic Analysis

Operations of highway facilities are evaluated using qualitative measures that characterize both the operational conditions within a traffic stream and their perception by motorists and passengers. Traffic operations are often characterized by a Level of Service (LOS) A through F, where LOS A indicates that the facility is operating at free flow conditions and LOS E indicates that the facility is operating at its capacity. LOS F represents the worst conditions of a facility where motorists experience the most congestion. Operational analyses for the I-270 and US 15 corridors were performed using Highway Capacity Software (HCS) version 4.1, which is based on the capacity analysis methodology contained in the *Highway Capacity Manual 2000*. Capacity analyses were calculated to determine the LOS for freeway mainline sections. These HCS analyses were performed for 2030 No-Build and 2030 build alternatives.

Traffic Operations for No-Build Conditions

**Table III-8** illustrates the AM and PM peak hour mainline LOS for the 2030 No-Build conditions on the mainline of I-270 and US 15 in the project area.

Operations on the mainline of I-270 and US 15 are projected to continue to degrade significantly from existing conditions to the 2030 No-Build Alternative. Large portions of US 15 and I-270 will experience LOS E/F conditions in the peak direction.

Congestion is expected to worsen during the AM peak hour, with the southbound direction of I-270 and US 15 projected to operate at LOS E/F along I-270 except for the section immediately south of I-370, which would operate at LOS C. Southbound US 15 is projected to operate at LOS E/F except for the sections from I-70 to Jefferson Street and from MD 26 to Monocacy Boulevard, which will operate at LOS D. Also during the 2030 AM peak hour, the off-peak direction, northbound I-270, will operate close to capacity (LOS E) in the section from MD 80 to MD 85.

Congestion is also projected to worsen for the northbound direction of I-270 and US 15 during the 2030 PM peak hour. Northbound I-270 will operate at LOS E/F except for the sections from immediately south of I-370 to MD 117 and from MD 118 to Father Hurley Boulevard, which will operate at LOS D, and the section from MD 117 to MD 124, which will operate at LOS C. Northbound US 15 will degrade significantly during the 2030 PM peak hour, operating at LOS E/F except for the section from I-70 to Jefferson Street, which will operate at LOS C.

The off-peak southbound direction of I-270 and US 15 during the PM peak hour will continue to worsen, with sections from MD 85 to I-70 and from US 40/MD 144 to Rosemont Avenue projected to operate at LOS F, and sections from MD 80 to MD 85, from Jefferson Street to US 40/MD 144, and from Rosemont Avenue to 7<sup>th</sup> Street will operate at LOS E.

Traffic Operations for 2030 Build Alternatives

**Table III-8** compares the AM and PM peak hour mainline and ETL LOS between the projected 2030 traffic for Alternatives 6A/B and 7A/B.

Alternatives 6A/B

Alternatives 6A/B result in improved traffic operations along the I-270/US 15 corridor compared to 2030 No-Build conditions, especially on US 15 northbound and southbound during AM and PM peak hours, respectively. Over the entire 32± mile corridor study area, the proposed improvements of Alternatives 6A/B result in approximately four fewer miles of failing (LOS F) roadway northbound and approximately eight fewer miles of failing (LOS F) roadway southbound as compared to the 2030 No-Build condition.

Specifically, in the northbound direction, during the PM peak hour, the mainline is projected to operate at LOS F in the sections from Watkins Mill Road to Middlebrook Road and from Newcut Road to MD 85. The sections of the I-270/US 15 corridor from I-370 to MD 117, from Father Hurley Boulevard to Newcut Road, from MD 85 to I-70, from Jefferson Street to US 40/MD 144, and the section immediately north of Biggs Ford Road are all projected to operate at LOS E. All other segments of the corridor are projected

to operate at LOS D or better. All sections of the northbound ETLs are also projected to operate at LOS D or better during the PM peak hour.

In the southbound direction, during the AM peak hour, the mainline is projected to operate at LOS F from MD 85 to Father Hurley Boulevard and LOS E in the sections from Watkins Mill Road to MD 124, from MD 118 to Middlebrook Road, from US 40/MD 144 to Jefferson Street, and the section immediately north of Biggs Ford Road. All other segments are expected to operate at LOS D or better. For the ETL system, all sections will operate at LOS D or better except for the one-lane section immediately south of I-370, which is projected to operate at LOS E during the AM peak hour.

Alternatives 7A/B

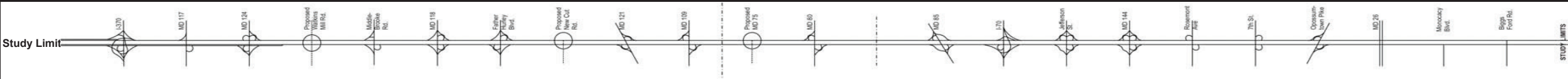
Alternatives 7A/B offer even greater potential congestion relief than Alternatives 6A/B. Over the entire 32± mile corridor study area, Alternatives 7A/B are projected to have 26 fewer miles of mainline freeway operating under failing (LOS F) conditions compared to the 2030 No-Build Alternative (or 14 fewer miles of failing roadway compared to Alternatives 6A/B).

In the northbound direction, during the PM peak hour, the mainline of I-270 is projected to operate at LOS F from MD 121 to MD 109, and from MD 75 to MD 85. LOS E operations are projected for the sections from I-370 to MD 117, from Watkins Mill Road to Middlebrook Road, from Father Hurley Boulevard to MD 121, from MD 85 to I-70, and from Jefferson Street to US 40/MD 144. All other sections, including US 15 and the ETL, will operate at LOS D or better.

In the southbound direction, during the AM peak hour, the I-270/US 15 corridor is projected to operate at LOS F from MD 85 to MD 80 and from Watkins Mill Road to MD 124, and LOS E for the US 15 section north of Biggs Ford Road, from MD 80 to MD 75, and from MD 109 to Father Hurley Boulevard. All other general purpose lane sections of I-270 and US 15 are projected to operate at LOS D or better. In the southbound direction, the entire ETL system is projected to operate at LOS D or better except for the one-lane ETL section south of I-370, which is projected to operate at LOS E.



Table III-8: 2030 No-Build and Build Alternatives Peak Hour Mainline LOS and Volume to Capacity (V/C) Ratios Along I-270 and US 15

				Interstate 270														US 15											
SOUTHBOUND I-270 and US 15	PM PEAK HOUR	Alternative 7A/B (2 ETLs north and south of Clarksburg)	LOS V/C	B 0.41	B 0.42	A 0.28	C 0.51	B 0.43	B 0.49	B 0.38	C 0.56	C 0.56	C 0.52	B 0.46	C 0.53	C 0.54	B 0.43	C 0.59	B 0.45	D 0.78	C 0.64	C 0.52	C 0.47	B 0.38	B 0.42	B 0.39	B 0.35		
		Alternative 6A/B (1 ETL north of Clarksburg and 2 ETLs south of Clarksburg)	LOS V/C	B 0.43	B 0.44	B 0.31	C 0.53	B 0.45	C 0.52	B 0.40	C 0.59	C 0.63	C 0.58	C 0.52	C 0.59	C 0.62	C 0.55	C 0.54	B 0.43	D 0.78	C 0.64	C 0.53	C 0.47	B 0.38	B 0.42	B 0.40	C 0.52		
		Alternative 1 - No Build	LOS V/C	B 0.37	C 0.60	B 0.47	C 0.54	C 0.59	C 0.69	B 0.48	D 0.74		D 0.75	D 0.82		E 0.89		F 1.42	C 0.52	E 0.89	E 0.89	E 0.92	D 0.83	D 0.71	C 0.57	C 0.59	C 0.51		
	AM PEAK HOUR	Alternative 7A/B (2 ETLs north and south of Clarksburg)	LOS V/C	D 0.75	D 0.84	C 0.61	F 1.03	D 0.80	D 0.87	C 0.70	E 0.95	E 0.98	E 0.98	D 0.82	E 0.99	F 1.22	F 1.05	D 0.74	C 0.65	D 0.87	D 0.72	C 0.62	C 0.65	C 0.59	D 0.69	D 0.69	E 0.89		
		Alternative 6A/B (1 ETL north of Clarksburg and 2 ETLs south of Clarksburg)	LOS V/C	D 0.76	D 0.84	C 0.61	E 1.00	D 0.84	E 0.92	D 0.82	F 1.11	F 1.16	F 1.29	F 1.14	F 1.32	F 1.54	F 1.34	C 0.67	C 0.65	E 0.89	D 0.73	C 0.62	C 0.65	C 0.59	D 0.69	D 0.70	E 0.89		
		Alternative 1 - No Build	LOS V/C	C 0.67	F 1.14	E 0.93	F 1.08	F 1.15	F 1.28	E 0.90	F 1.31		F 1.58	F 1.57		F 1.94		F 1.71	D 0.70	E 0.92	E 0.92	E 0.99	F 1.04	E 0.98	D 0.77	E 1.00	E 0.89		
Corridor Segments																													
NORTHBOUND I-270 and US 15	AM PEAK HOUR	Alternative 1 - No Build	LOS V/C	B 0.39	B 0.41	A 0.26	B 0.46	B 0.49	B 0.40	B 0.39	C 0.57		C 0.68	D 0.73		E 0.89		C 0.47	B 0.34	D 0.69	D 0.84	D 0.73	C 0.60	C 0.54	B 0.44	B 0.38	B 0.38		
		Alternative 6A/B (1 ETL north of Clarksburg and 2 ETLs south of Clarksburg)	LOS V/C	B 0.35	B 0.46	A 0.26	B 0.34	B 0.49	B 0.40	A 0.30	B 0.46	B 0.46	C 0.52	B 0.44	C 0.55	C 0.60	C 0.62	C 0.60	B 0.32	C 0.63	C 0.52	B 0.46	B 0.38	B 0.32	B 0.37	B 0.29	B 0.33		
		Alternative 7A/B (2 ETLs north and south of Clarksburg)	LOS V/C	B 0.35	B 0.45	A 0.25	B 0.33	B 0.47	B 0.38	A 0.29	B 0.44	B 0.42	C 0.51	B 0.43	C 0.52	C 0.61	C 0.48	C 0.48	B 0.32	C 0.63	C 0.52	B 0.45	B 0.38	B 0.31	B 0.36	A 0.28	A 0.14		
	PM PEAK HOUR	Alternative 1 - No Build	LOS V/C	D 0.86	D 0.86	C 0.58	E 0.97	F 1.07	E 0.91	D 0.84	F 1.32		F 1.65	F 1.70		F 1.99		E 0.90	C 0.58	E 0.93	F 1.14	F 1.04	F 1.10	F 1.03	F 0.93	F 1.05	F 1.05		
		Alternative 6A/B (1 ETL north of Clarksburg and 2 ETLs south of Clarksburg)	LOS V/C	D 0.80	E 0.92	C 0.56	C 0.65	F 1.01	D 0.84	C 0.62	E 1.00	F 1.03	F 1.22	F 1.06	F 1.29	F 1.60	F 1.37	E 0.89	C 0.55	E 0.89	D 0.73	C 0.65	D 0.70	C 0.61	D 0.76	D 0.76	E 0.96		
		Alternative 7A/B (2 ETLs north and south of Clarksburg)	LOS V/C	D 0.80	E 0.90	C 0.53	C 0.65	E 0.95	D 0.79	C 0.58	E 0.94	E 0.95	F 1.02	D 0.84	F 1.06	F 1.24	F 1.08	E 0.95	C 0.57	E 0.89	D 0.72	C 0.65	D 0.70	C 0.60	D 0.76	D 0.76	C 0.58		
LEGEND																													
VOL = 2030 Traffic Volume (vehicles per hour) LOS = Levels of Service		V/C = Volume-to-Capacity Ratio A – D = Free or Stable Flow/Reduced Speeds E = Irregular Flow/Speeds/With Occasional Stop-and-Go F = Congested; Stop-and-Go Conditions		V/C Ratio Range (70 mph) South of I-370 to Father Hurley Blvd.		A 0.00 – 0.30 B 0.31 – 0.50		C 0.51 – 0.71 D 0.72 – 0.89		E 0.90 – 1.00 F >1.00		V/C Ratio Range (65 mph) Father Hurley Blvd. to Biggs Ford Rd.		A 0.00 – 0.29 B 0.30 – 0.47		C 0.48 – 0.68 D 0.69 – 0.88		E 0.89 – 1.00 F >1.00											

Park and Ride Lots and Transit Station Parking

Park and Ride Lots

In October 1997, SHA completed an I-270 Park and Ride Site Identification Study that examined the feasibility of various sites for new or expanded parking opportunities. From this data and a corridor reconnaissance, park and ride lots exist or are planned (as noted) directly along the I-270/US 15 corridor at the following locations: I-270/MD 117 interchange northeast quadrant (existing); I-270/MD 124 southwest quadrant (existing); I-270/MD 121 northwest quadrant

(proposed); MD 80 northeast and southeast quadrants (existing); MARC Monocacy Station (existing); US 15/ Monocacy Boulevard interchange northeast quadrant (proposed). Park and ride lots are being considered in each of the proposed alternatives. A preliminary concept has been developed at Biggs Ford Road in Frederick County in the northwest quadrant of the proposed US 15/Biggs Ford Road interchange. Additional park and ride lots may be considered in the following locations: along Observation Drive in Montgomery County and in the northeast quadrant of the proposed

I-270/MD 75 extended interchange in Frederick County. These potential lots may be considered further as the study progresses or if SHA, MTA, or the counties decide to pursue them in advance of this study’s completion.

Transit Station Parking

Table III-9 provides transit station parking demand and proposed capacity for proposed LRT and BRT. As summarized in Table III-1, the travel demand forecasts assigned constrained parking capacity at the Rockville

and Shady Grove Metrorail stations, and unconstrained parking capacity at other existing Metrorail stations and the proposed CCT stations. There is sufficient proposed parking capacity for the overall CCT alignment to meet the estimated parking demand. The CCT station parking capacities were established to discourage drive access trips to CCT stations closest to the Shady Grove Metrorail station. CCT passengers will be able to use the proposed feeder bus service to access all CCT stations. Stations further away from the Shady Grove Metrorail station are proposed with more parking



capacity to encourage longer distance trips to change transportation modes from single occupant vehicles onto transit. In addition, the northern CCT stations with the largest parking capacities (Metropolitan Grove, Germantown and COMSAT) are accessible via ETL direct access ramps from I-270.

Highway Conclusions

**Table III-8** shows the LOS along mainline I-270 and US 15 will degrade significantly through year 2030. In general, the 2030 No-Build scenario results in LOS E/F conditions along mainline I-270/US 15 during the AM and PM peak periods.

With the proposed Montgomery County highway improvements (Alternatives 6A/B and 7A/B), the I-270 mainline sections will show improving conditions during the 2030 AM and PM peak periods. The improvement is due to the ETLs providing relatively congestion-free travel speeds past existing bottlenecks caused by entering/exiting interchange traffic. Also, ETL usage by former general purpose lane vehicles reduces the general purpose lane traffic densities, thus improving operating conditions. In northern Montgomery County (north of MD 121), Alternative 7A/B further improves roadway congestion by offering a second ETL for motorists to choose a reliable travel time versus the potentially congested general purpose lanes.

With the proposed Frederick County highway improvements (Alternatives 6A/B and 7A/B), the I-270 mainline section will also show improving conditions during the 2030 AM and PM peak periods. Although the two build alternatives add highway capacity, the general purpose lanes both experience LOS F conditions for either all or most of the highway segments from the Montgomery County line to MD 85. Alternative 7A/B experiences better overall traffic operational conditions due to the additional ETL lane over Alternative 6A/B. The proposed traffic volumes of the two build alternatives are relatively close in their forecasts with Alternative 7A/B having approximately five percent more ADT than Alternative 6A/B but providing approximately 22 percent more vehicle capacity.

The general trend along US 15 through the City of Frederick is that the build alternative traffic conditions will improve over the No-Build condition and remove

all LOS F conditions from year 2030. Alternative 7A/B will experience one LOS E segment while Alternative 6A/B will experience two LOS E segments (Jefferson Street to US 40/MD 144 and north of Biggs Ford Road). Each of the build alternatives yield similar results along US 15 due to the identical improvements in this segment.

The overall traffic analysis shows that I-270 and US 15 will continue to experience congested segments (with the proposed build alternatives) to 2030 and beyond due to the existing and projected growth along the corridor. However, the build alternatives do provide congestion relief for segments of I-270 and US 15 as well as for those motorists who choose to travel in the ETLs. In addition, the projected traffic operations would be worse under the No-Build Alternative. **Table III-10** reviews the difference in mainline segment miles that operate under LOS F conditions for the 2030 build alternatives and 2030 No-Build conditions and illustrates the congestion relief for the general purpose lanes gained with the 2030 build alternatives.

Alternative 6A/B would provide a 12-mile total reduction in the mainline segments operating at LOS F (four miles reduction northbound, eight miles reduction southbound). Alternative 7A/B would provide a 26-mile total reduction in the mainline segments operating at LOS F (eight miles reduction northbound, 18 miles reduction southbound). Therefore, Alternative 7A/B offers the greatest reduction in LOS F mileage along the corridor in 2030 when compared to the expected No-Build and Alternative 6A/B conditions.

Multi-Modal Conclusions

The travel demand modeling results concluded that neither transit mode (LRT or BRT) causes a significant reduction in highway travel demand and peak hour volumes; however, the proposed build alternatives do provide additional mobility and modal options with free-flow conditions and consistent travel times. A multi-modal approach, either implemented simultaneously or phased, is a prudent option for the corridor since the highway and transit improvements under consideration serve different users, travel markets (long-range vs. commuter) and trip origins and destinations.

Table III-9: Transit Station Parking Requirements

STATION LOCATION		PARKING CAPACITY	PARKING DEMAND BY ALTERNATIVE			
FIRST STATION	LAST STATION		ALTERNATIVE 6A (LRT)	ALTERNATIVE 6B (BRT)	ALTERNATIVE 7A (LRT)	ALTERNATIVE 7B ( BRT)
Shady Grove <sup>1</sup>	Shady Grove	N/A	150	150	150	150
East Gaither (King Farm)	Washingtonian	450	700	750	700	800
DANAC	Decoverly	250	350	250	350	300
Quince Orchard	Metropolitan Grove	1,500 <sup>2</sup>	1,050	1,000	1,000	950
Germantown	Cloverleaf	1,100	600	500	600	450
Dorsey Mill	COMSAT	1,500	500	600	550	650
Total		4,800	3,150	3,250	3,350	3,300

<sup>1</sup> Shady Grove Metrorail Station parking will be accommodated by expanded Metrorail parking. Cannot determine access mode since station shares parking with Metrorail.

<sup>2</sup> Metropolitan Grove CCT Station parking capacity of 1,000 spaces excludes the existing 350 spaces at the Metropolitan Grove MARC Station.

Source: Phase I Year 2030 Washington Area Model; I-270/US 15 Multi-Modal Corridor Study Corridor Cities Transitway Detailed Definition of Alternatives (October 2007).

Table III-10: I-270/US 15 Level of Service Improvements

	2030 NO-BUILD	ALTERNATIVES 6A/B	ALTERNATIVES 7A/B
Year 2030 Mainline Segment Mileage of LOS F Operating Conditions*			
I-270/US 15 Northbound (PM Peak Hour, Peak Direction)	20	15.8	11.6
I-270/US 15 Southbound (AM Peak Hour, Peak Direction)	23.2	15.5	5.7
Total Mileage of LOS F Segments	43.2	31.3	17.3
Year 2030 Mileage Reduction of LOS F Segments from No-Build and TSM/TDM Alternates			
I-270/US 15 Northbound (PM Peak Hour, Peak Direction)	N/A	4.2	8.4
I-270/US 15 Southbound (AM Peak Hour, Peak Direction)	N/A	7.7	17.5
Total Mileage Reduction of LOS F Segments	N/A	11.9	25.9

\* I-270/US 15 corridor within project limits is approximately 32.1 miles for a total length of 64 miles.



# Chapter IV – Environmental Resources and Consequences





# Environmental Resources and Consequences

## A. Land Use, Zoning and Future Development

The purpose of this section is to present the existing and future land use information for the I-270/US 15 Multi-Modal Corridor Study. The text also includes updated information to the Land Use, Zoning and Future Development information originally presented in the 2002 I-270/US 15 *Multi-Modal Corridor Study Draft Environmental Impact Statement* (DEIS). Existing land use patterns, planned and programmed developments, zoning, and long-range plans within the study corridor are discussed by jurisdiction, starting at the county level, and then by municipality within each county where appropriate. In addition, active agricultural uses are also described briefly as a distinct and significant land use activity within the two counties. The discussion of existing conditions is followed by an analysis of potential effects of the proposed project. Potential effects of the proposed alternatives on land use are assessed through the “characterization” or “evaluation” of direct and indirect effects. Potential mitigation strategies where applicable are also presented for review.

### Existing Conditions

Land use typically includes four fundamental elements:

- **Existing land use patterns** – the manner in which land is being used today including undeveloped or vacant/previously used land.
- **Zoning** – Zoning regulations carry the weight of law and establish districts or zones designated for specific types of land uses/activities. Consequently, future development can reasonably be expected to follow the allowable land uses specified for each zone and zoning mostly reflects the current goals or wishes of the community. Zoning can be changed by legislative action.
- **Planned and programmed development** – Planned and programmed projects include developments which have received zoning approval. These developments can reasonably be expected to be built and exist in the future based on their regulatory approval, but are at varied stages of completion.
- **Long-range plans and Smart Growth initiatives** – The long-range and Smart Growth plans of each of

the jurisdictions falling all or partially in the study corridor set land use policy for the future to guide implementation of the community vision.

### Existing Land Use

A review of current land uses in Montgomery and Frederick counties as of 2006 is documented in the following paragraphs. Some land use areas are similar to what was reported in the 2002 DEIS and some land uses have changed based on the growth and development that has occurred over the last few years. *Figure IV-1 (Sheets 1 through 5)* illustrates the existing land use along the I-270/US 15 Corridor.

### Montgomery County

Existing land use in Montgomery County was identified using local planning documents, data from the Maryland-National Capital Park and Planning Commission (M-NCPPC), and field surveys. In general, Montgomery County has a mix of land uses that includes agricultural, residential, parkland, institutional, industrial and commercial. The majority of suburban development is clustered along major roads and in small communities. Montgomery County currently ranks number one in the nation in agricultural land preservation with over 30 percent of the county’s entire land area set aside as parkland, agricultural, or other open space. In terms of office space, Montgomery County has more than 77 million square feet of office and research space available, with another 30 million square feet proposed for future development.

The I-270/US 15 Corridor extends across a series of so-called “Corridor Cities” including Rockville, Gaithersburg, Germantown and Clarksburg. They are linked to each other and to Washington, DC by highway and transit. These communities are the areas within the study corridor in Montgomery County that have experienced the most land use change in recent years. The current land use patterns in each of the Corridor Cities are summarized as follows:

- The City of Rockville has continued to grow in both density and intensity of development as a major employment and retail center in

Montgomery County. The city annexed King Farm and construction is continuing for a mixed-use development on the property. Several phases of construction are already complete.

- The City of Gaithersburg annexed several large parcels, including Crown Farm, and lifted a development moratorium. Consequently, the city has experienced intense development over the last two years and is considering a new moratorium on the redevelopment of older, multi-family housing for more dense residential uses.
- Germantown is an unincorporated town which has experienced considerable growth in housing development and is now close to reaching its capacity in terms of residential units.
- Clarksburg is an unincorporated town which creates a transition from the more densely developed portions of the I-270 Corridor to the south and the more rural agricultural land uses to the north. Over the last several years, Clarksburg has become increasingly attractive to businesses. Most notably, the Lockheed Martin complex is located in Clarksburg east of I-270. The Gateway 270 West project is currently under development and consists of six buildings totaling nearly 255,000 square feet of flexible office space.

### Frederick County

Frederick County is Maryland’s largest county by land area, covering more than 664 square miles. Existing land use was identified using local planning documents and field surveys. The county classifies about 68 percent of land as agricultural, undeveloped, and woodland areas – the largest proportion of land use in Frederick County. Other land uses include residential, commercial, industrial and institutional. The county, now home to 4,470 businesses, supports new business development, including the regional headquarters for State Farm Insurance Company and two of the largest warehouse/industrial buildings in the state (Georgia Pacific and Toys “R” Us).

The I-270 Corridor runs north/south through the center of Frederick County. Although still predominantly agricultural, the land use in the county has steadily changed to include a larger percentage of residential, commercial and industrial land uses. Almost all of these land use changes have occurred in and around Frederick City. Since 2000, the Urbana region of south central Frederick County has experienced an increased rate of construction, primarily for single family homes. The largest recent project in this region is the Villages of Urbana, a mixed-use, neo-traditional development located on the east side of I-270 and MD 355 and north of MD 80.

### Zoning

Zoning controls a local jurisdiction’s long-range land use objectives and influences the type and form of development that occurs over time. Local jurisdictions prepare updated zoning designations on a periodic basis. These updates are the result of property owners and land use planning requests.

### Montgomery County

The City of Rockville is currently undergoing a comprehensive update to the 1975 zoning ordinance. Notable rezoning in the corridor since the 2002 DEIS includes the master-planned King Farm and Fallsgrove mixed-use developments.

The City of Gaithersburg adopted a new zoning map in July 2005. In Gaithersburg, the majority of the land located adjacent to the I-270 corridor is zoned for mixed uses (MXD). However, the city expects to annex and rezone the National Institute of Standards & Technology (NIST) property and to rezone the undeveloped parcels in the Casey-Metropolitan Grove area to MXD in coordination with the Watkins Mill Road Extended Project.

Montgomery County designated both sides of I-270 in Germantown as an employment corridor within the Technology and Business Park (I-3) zone. The proposed Corridor Cities Transitway (CCT) alignment travels near I-270 and can serve the dense development allowed by the I-3 zone.



### Figure IV-1: Land Use

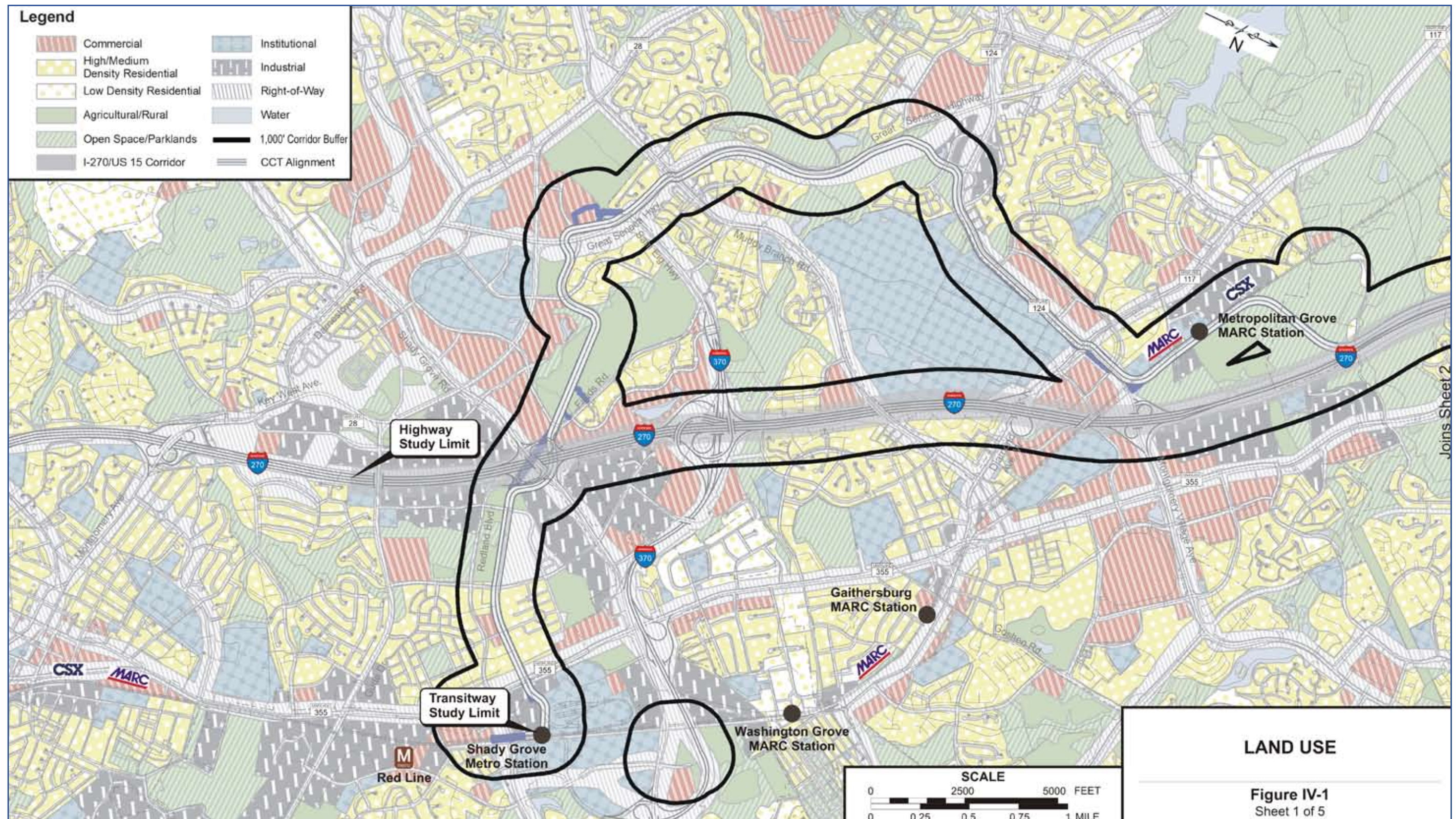




Figure IV-1: Land Use

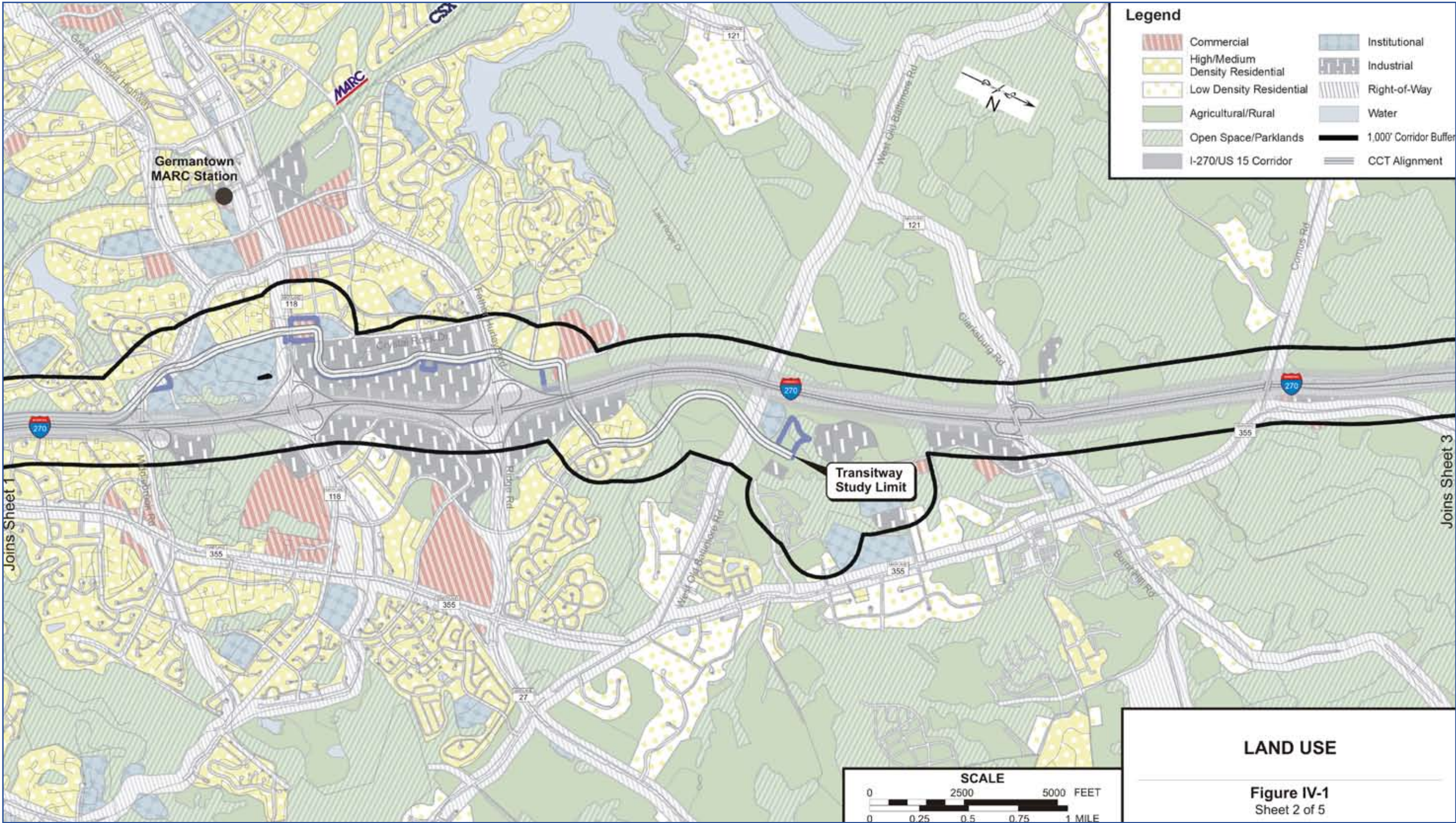




Figure IV-1: Land Use

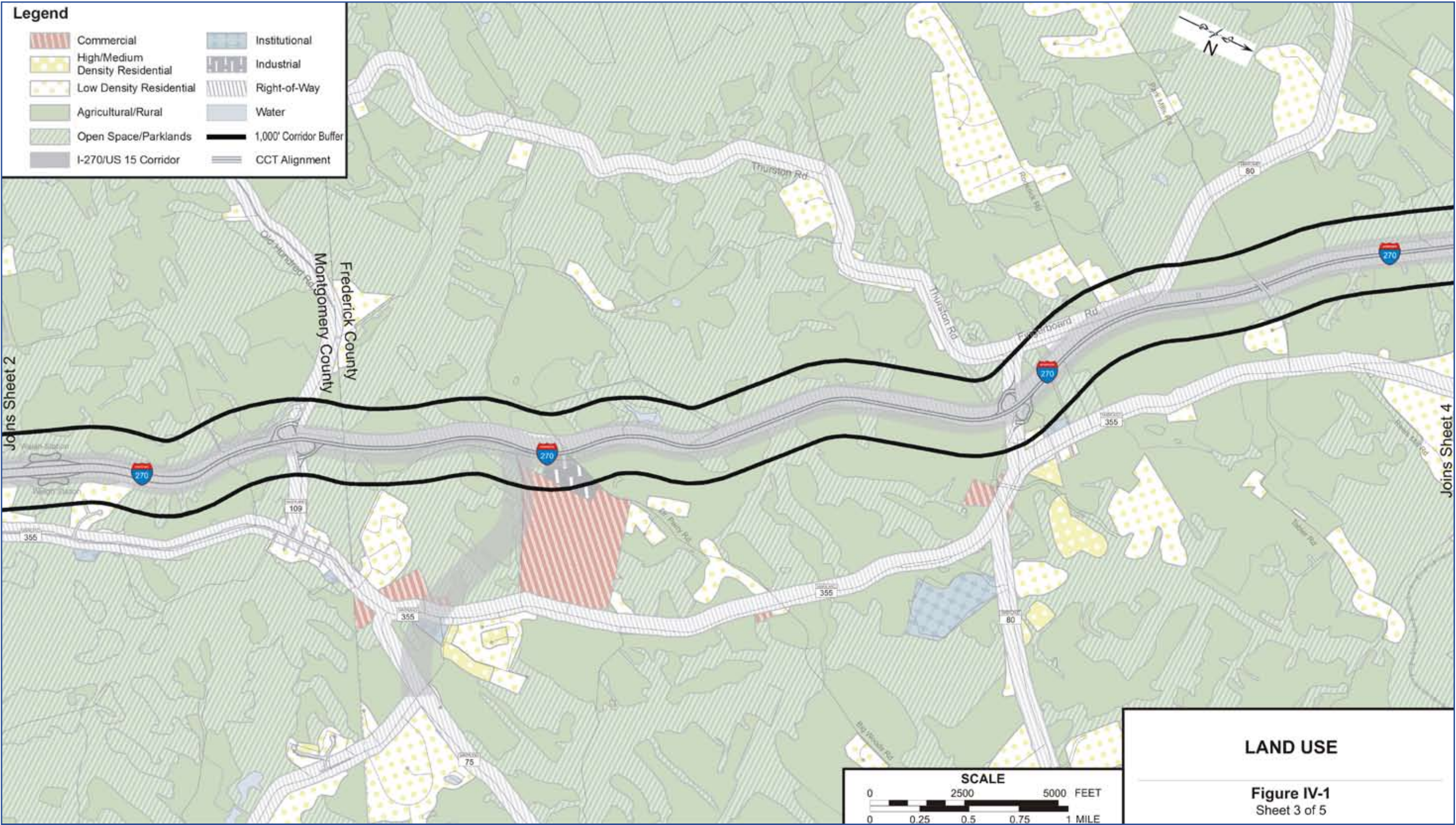




Figure IV-1: Land Use

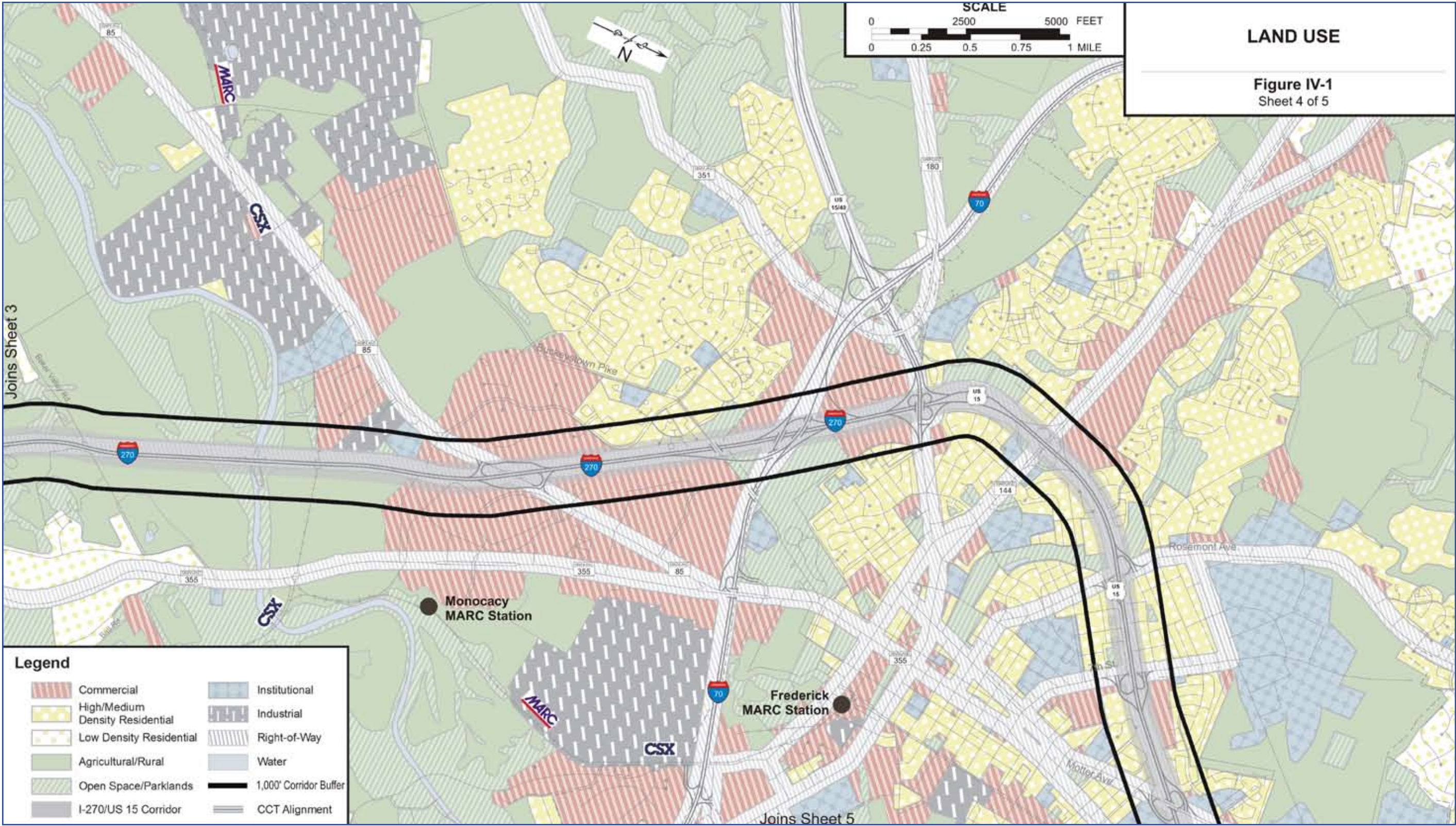




Figure IV-1: Land Use

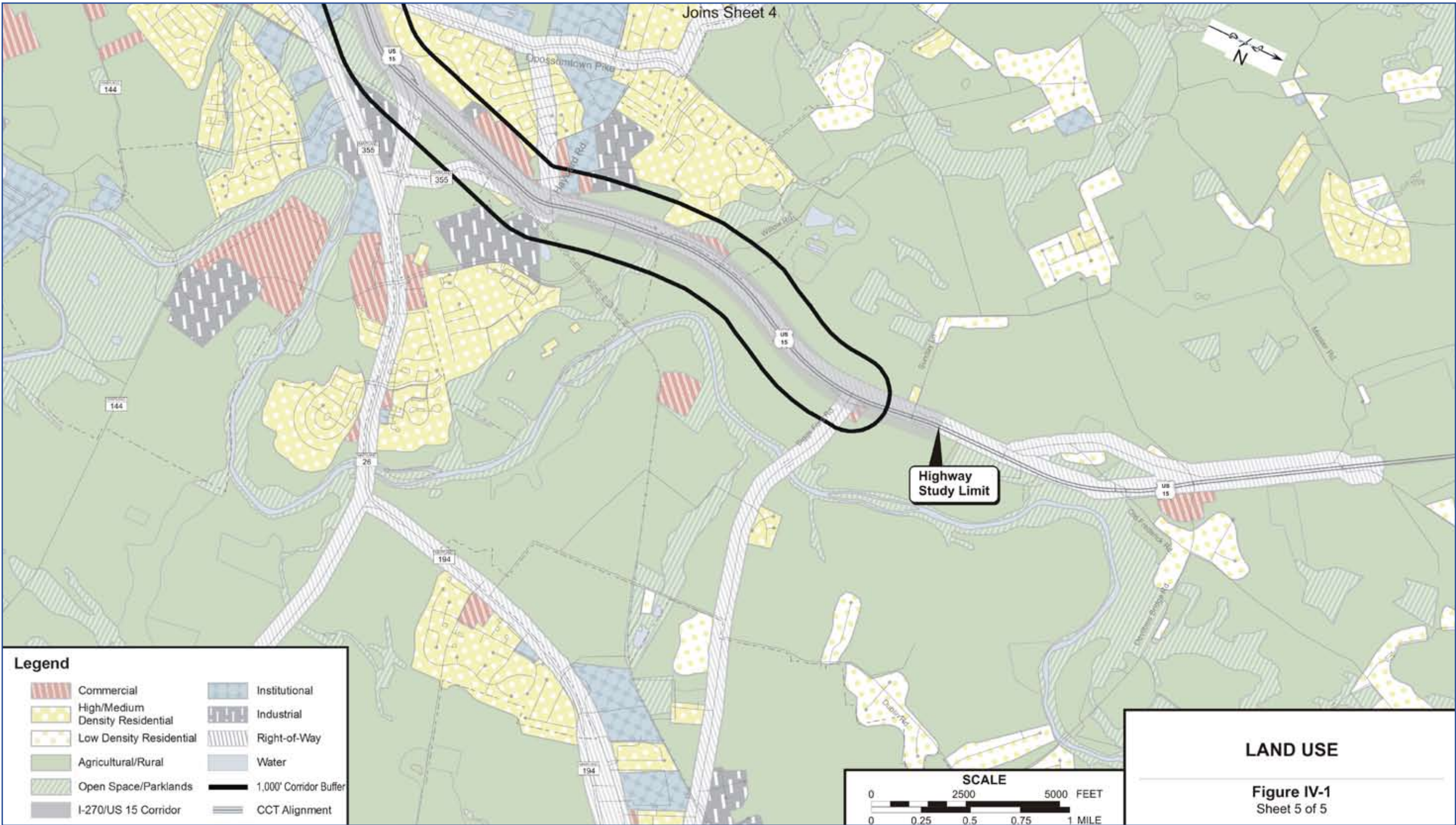






Table IV-1: Future Planned and Programmed Developments in the I-270/US 15 Corridor in Montgomery County

LOCATION	PROJECT NAME	PROPOSED USE
Shady Grove	Shady Grove Metro Inspection Yard Expansion	Expansion of existing facility
R&D Village	Decoverly Hall Parcel S	Office
Gaithersburg	Casey West Property (Watkins Mill Town Center)	Mixed use development
	Washingtonian Center Waterfront	Mixed office and retail
	Washingtonian Center Waterfront Phase II	87,815 square feet office, 18,080 square feet retail
	Washingtonian South	Office
	The Towns at Summit Woods	130 townhouse units
Germantown	New Covenant Fellowship Church	Addition of senior apartments to church uses
	Middlebrook Industrial Park Lots 1 and 2	Office/Retail
	Cloverleaf Center	Addition of 342,500 square feet office to four parcels
Clarksburg	Cabin Branch	2,100 dwelling units total [includes 210 moderately-priced dwelling units (mpdu)]; unit type to be determined at site plan review
	Thompson Farm	Residential units
	Linthicum East Property	253 residential units

Montgomery County has established an employment corridor on the east and west sides of I-270 in Clarksburg. Although the Clarksburg area is primarily rural and agricultural, the lands immediately adjacent to the I-270/US 15 Corridor have been zoned as MXD and I-3 to allow for more dense development near the highway and transit corridors.

Frederick County

Since the publication of the 2002 DEIS, Frederick County zoning designations have been modified to address the recommendations of the *Frederick Region Plan* (June 2004) and the *Urbana Region Plan* (June 2004). Major zoning modifications include:

- Adopted a MXD floating zone.
- Modified the land use and zoning map to designate approximately 100 acres of existing Light Industrial (LI) land as Office/Research/Industrial (ORI). This change will support the I-270 Technology Corridor by focusing the ORI land along I-270 and the LI land along MD 355.

Planned and Programmed Development

*Figure IV-2 (Sheets 1 through 5)* presents the locations of future “pipeline” development projects within the corridor. These are projects that have been approved for construction but are not yet built or fully completed. Information on major pipeline projects was obtained through interviews with local planning agencies. Projects are considered major developments if they include 50 or more new residential units and/or 100,000 or more square feet of non-residential development. There are numerous smaller development projects that are not identified individually but are present along the corridor. The 2008 *Socio-Economic/Land Use Technical Report* (SETR) discusses the pipeline development projects in more detail. *Table IV-1* and *Table IV-2* present the pipeline projects within the I-270/US 15 Corridor.

Smart Growth Initiatives and Long-Range Plans

Smart Growth Initiatives

The Smart Growth Areas Act (October 1997) seeks to direct state funding for growth-related projects to areas

Table IV-2: Future Planned and Programmed Developments in the I-270/US 15 Corridor in Frederick County

LOCATION	SITE	PROPOSED USE
Fingerboard Road	Mountain View Community Church	Industrial
MD 355 at MD 75	Crossroads Farms	Residential
MD 85 at I-270	Shockley Court	Commercial
Fingerboard Road	Potomac Garden Center [Built]	Commercial
Thurston Road	Greenbrier Boarding	Commercial
Hayward Road at US 15	Northgate Retail Center	Commercial
Buckeystown Pike	DANAC Center	Office/Commercial
Prospect Boulevard	Frederick Mini Storage South	Commercial

designated by local jurisdictions as Priority Funding Areas (PFAs). PFAs consist of existing communities and other designated areas that local jurisdictions and the Maryland Department of Planning (MDP) identify in accordance with Smart Growth guidelines. The Act guides future development to existing towns, neighborhoods, and business areas by directing infrastructure improvements to those places. The 2002 DEIS contains more detailed information regarding Maryland’s Smart Growth Initiative and the objectives of the Act. *Table IV-3* lists the PFAs, and *Figure IV-3* shows the boundaries of the PFAs. These have expanded slightly since 2002. All PFAs were confirmed using the latest information from the MDP.

Montgomery County Plans

Future land use policy was identified by reviewing local land use plans and through coordination with local planning agencies. Relevant local long-range plans include the county’s general plan [the *Montgomery County General Plan with Refinements* (1993)] and comprehensive plans for the municipalities and key

Table IV-3: Priority Funding Areas (PFAs) in the I-270/US 15 Corridor

PFA/STATUS	COUNTY	LOCATION RELATIVE TO PROJECT
Rockville Pre-defined Municipality	Montgomery	Within project area; at I-270/I-370 interchange
Gaithersburg Pre-defined Municipality	Montgomery	Within project area; at I-270/MD 124 interchange
Germantown County Certified Area	Montgomery	Within project area; at I-270/MD 118 interchange
Clarksburg County Certified Area	Montgomery	Within project area; at I-270/MD 121 interchange
Urbana County Certified Area	Frederick	Within project area; at I-270/MD 80 interchange
Frederick Pre-defined Municipality	Frederick	Within project area
Walkersville Pre-defined Municipality	Frederick	3 miles east of project area limit at US 15/MD 26 interchange.

development areas within the county including:

- *The City of Rockville Comprehensive Master Plan* (2002)
- *The Shady Grove Sector Plan* (2006)
- *The City of Gaithersburg Master Plan* [with component Land Use Plan] (2003)
- *The Germantown Master Plan* (1989)

The 2008 SETR presents specific land use policy and vision included in the planning documents listed above.

The *Montgomery County General Plan with Refinements* articulated a policy of concentrating future development in key areas, including transit stations. This general plan has not been modified and the stated policies have not changed. The general plan continues to serve as the basis for future land use policy within the corridor. Consequently, the I-270/US 15 Corridor, which extends through the center of Montgomery County, remains the primary focus of economic and transportation activity within Montgomery County.



Figure IV-2: Pipeline Projects in the I-270/US 15 Corridor

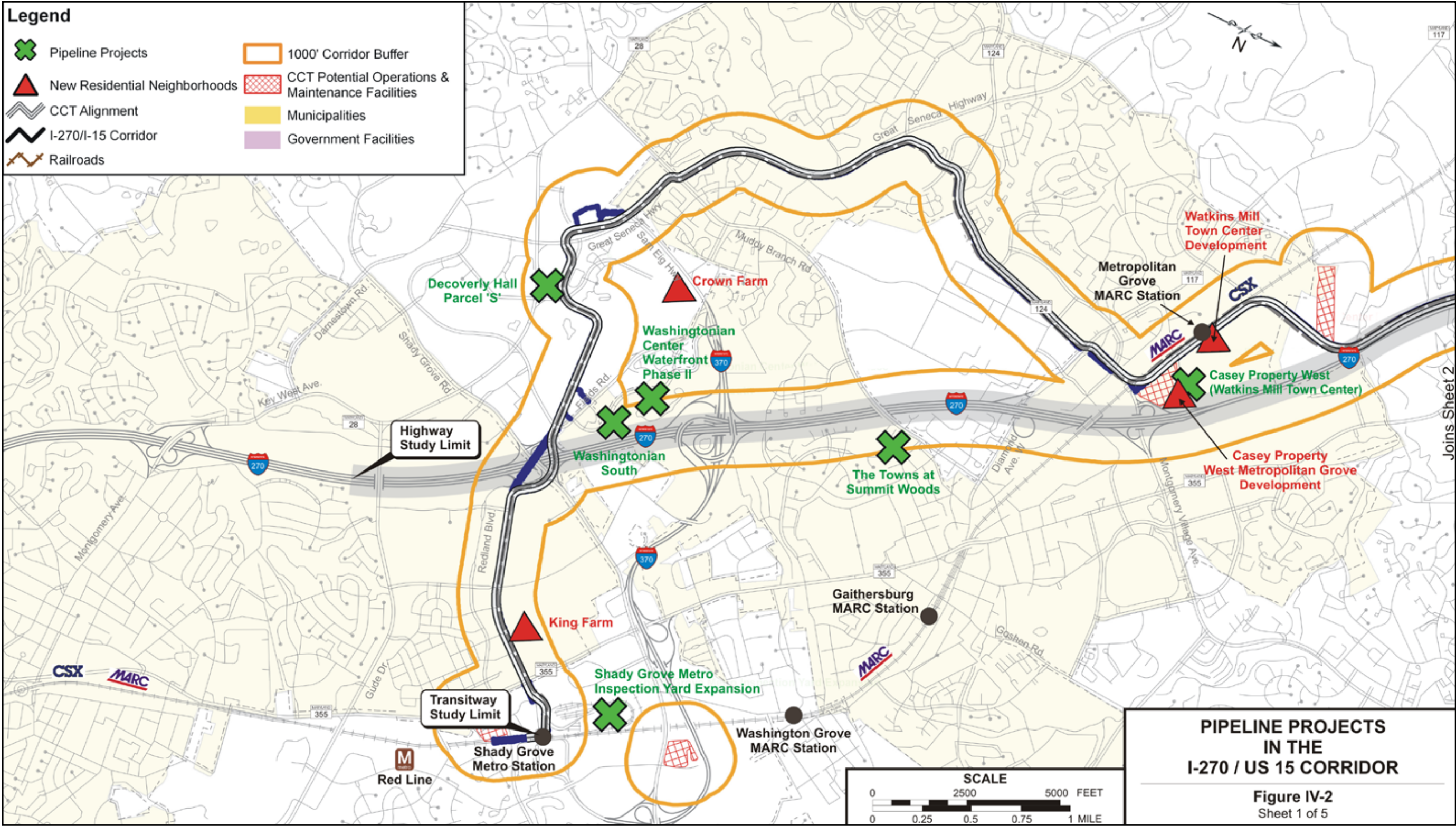




Figure IV-2: Pipeline Projects in the I-270/US 15 Corridor

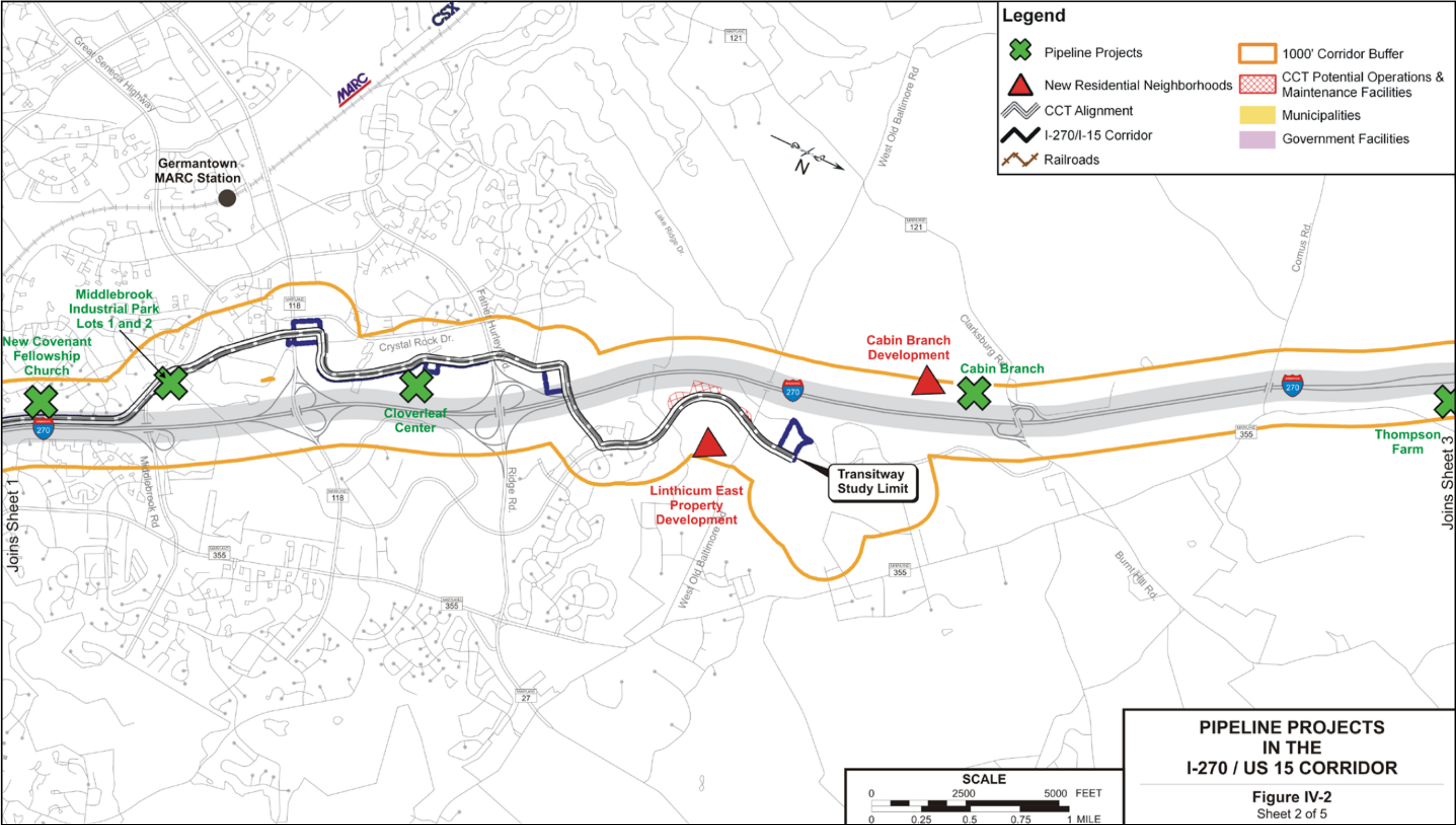




Figure IV-2: Pipeline Projects in the I-270/US 15 Corridor

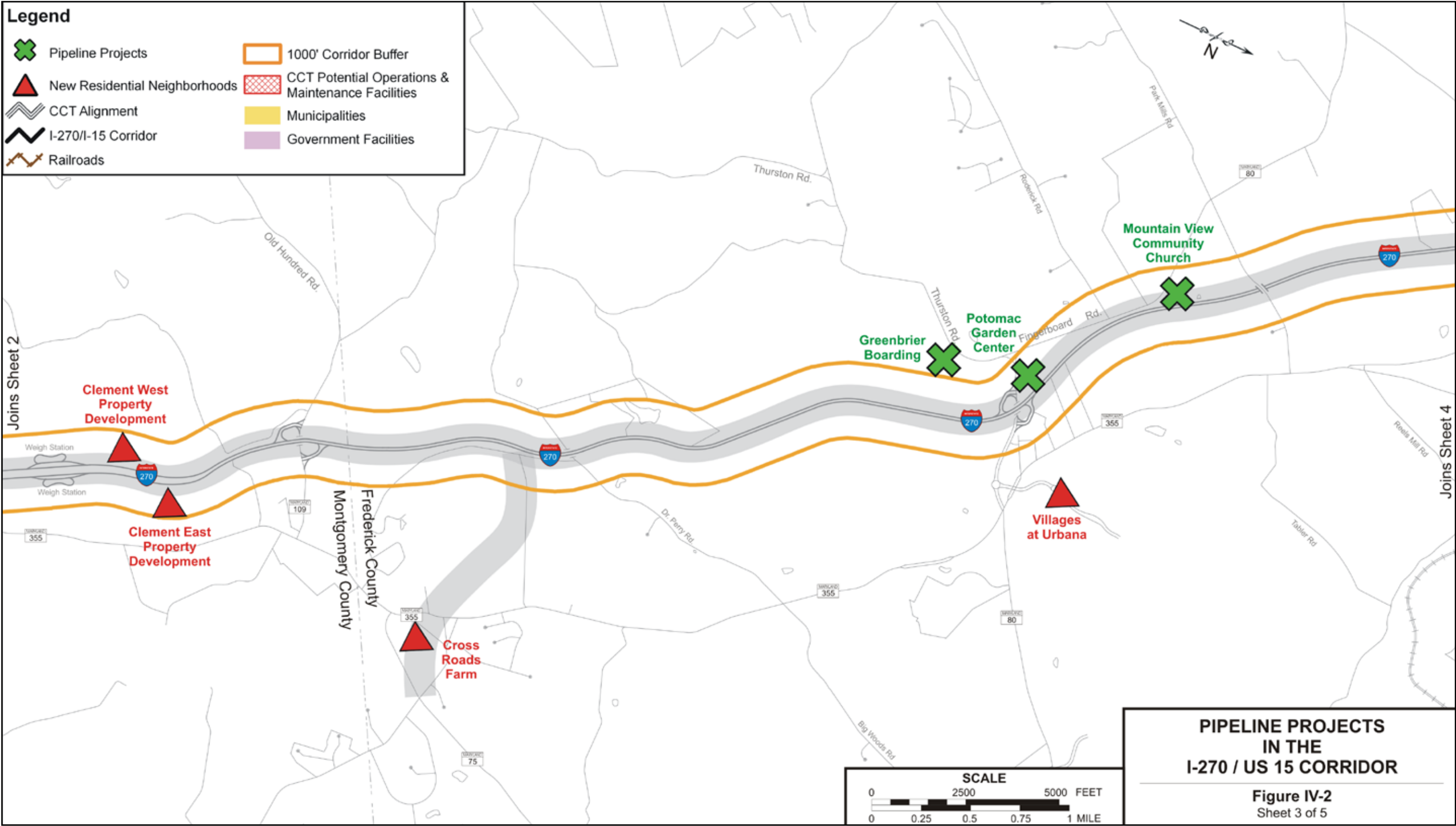




Figure IV-2: Pipeline Projects in the I-270/US 15 Corridor

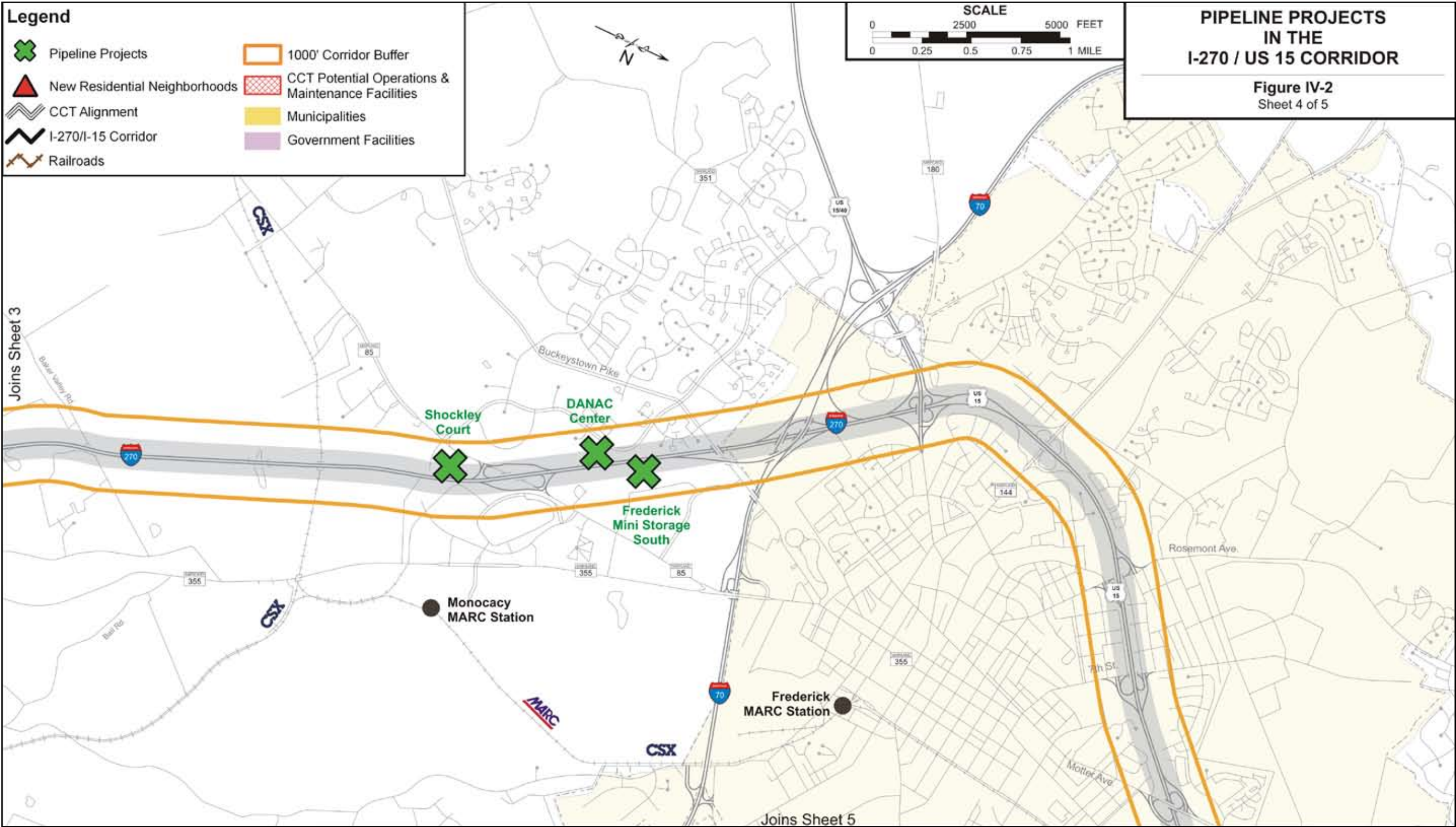




Figure IV-2: Pipeline Projects in the I-270/US 15 Corridor

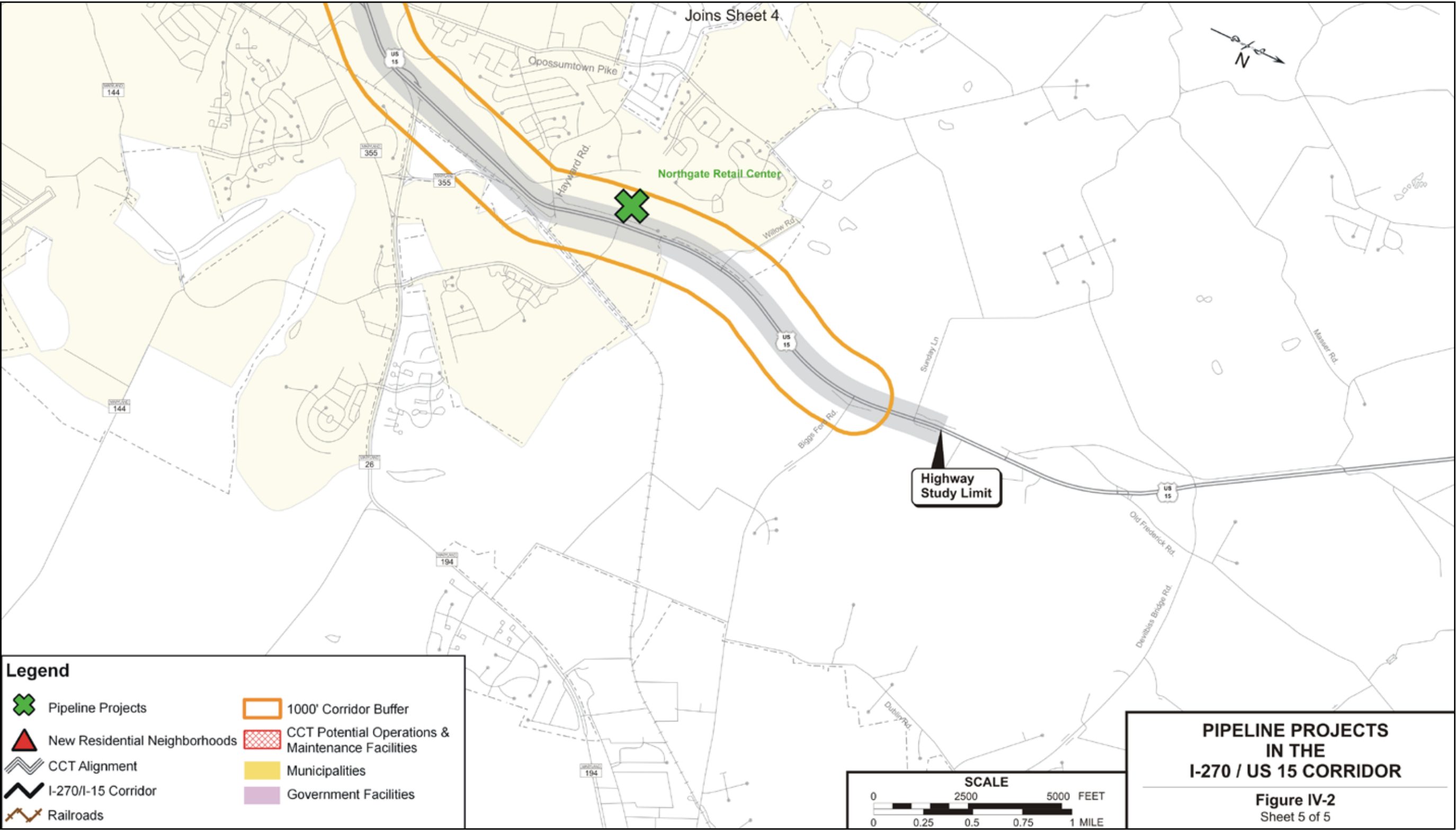
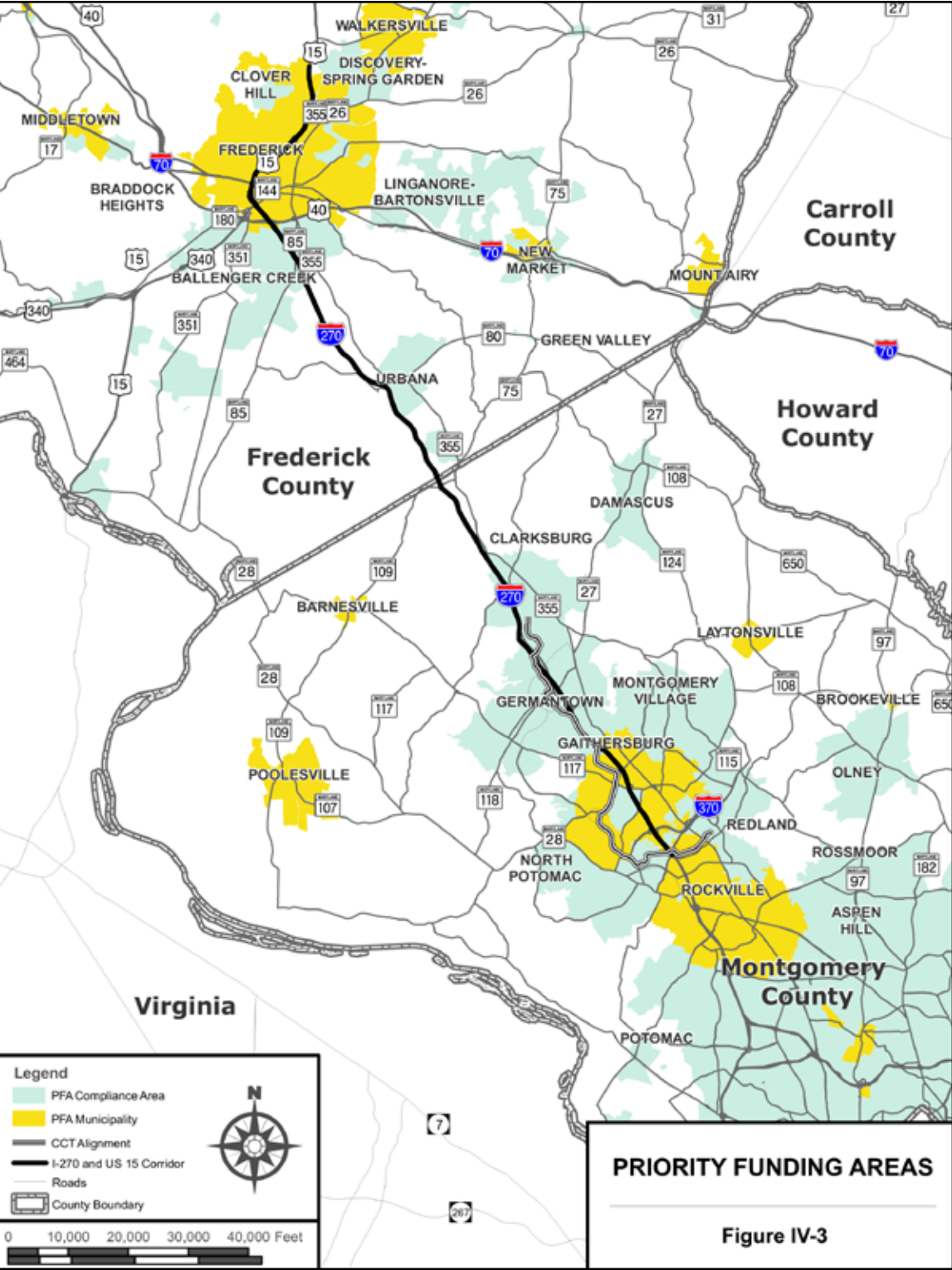




Figure IV-3: Priority Funding Areas



**Frederick County Plans**

Future land use policy was identified by reviewing local land use plans and through coordination with local planning agencies. Relevant local long-range plans are included in Frederick County’s general plan, the *Frederick Region Plan* (June 2004), and comprehensive plans for the municipalities and key development areas within the study corridor in the county including:

- *The Frederick City, Maryland Comprehensive Plan* (2004)
- *The Urbana Region Plan* (2004)

The 2008 SETR presents specific land use policy and vision included in the planning documents listed above.

The *Frederick Region Plan* reaffirms the “Community Concept” as the primary land use policy for Frederick County. The concept outlines a hierarchy of communities where growth will be centered, so that public facilities (such as water, sewer, schools, and transportation improvements) can be located in an efficient manner. The concept encourages compact and sustainable development and economic growth in suitable plan-designated areas.

The *Frederick Region Plan* recommends future land use for the northern portion of the I-270/US 15 Corridor. This plan supports all of the alternatives for the corridor. However, the plan recommends that any potential widening of the I-270/US 15 Corridor should minimize impacts to the Monocacy National Battlefield and the state-designated Civil War Battlefields Scenic Byway.

The *Urbana Region Plan* confirms the “Community Concept” with Urbana as the Regional Community, and identifies a future growth area, encompassing 1,225 acres, for the Urbana Regional Community that may be considered beyond the 20-year growth area. The plan supports development of the I-270 employment corridor and focuses office/research/industrial uses along the I-270 frontage. The plan further identifies transportation infrastructure needs including the MD 75 improvements and the I-270/MD 75 interchange, and maintains the transitway alignment, with an alternate route through the Urbana Town Center, along the east side of I-270.

**Farmland**

Active agriculture is a significant land use in the communities and counties that fall wholly or partially within the study corridor. Information on farmland soils (lands that have potential for production of high value food crops) is discussed separately in the Natural Resources section of this chapter. The amount of actively farmed land has decreased slightly within the study corridor since the 2002 DEIS, but still comprises nearly one-third of the land use in Montgomery County and about 46 percent of land use in Frederick County. These farms produce corn, wheat, hay, soybean, barley, and oats including crops that support livestock. Dairy farming is also a major activity in both counties. A listing of the existing farms and agricultural areas that are in or near the I-270/US 15 Corridor was identified in the DEIS.

**Impacts and Mitigation**

**Existing Land Use**

The No-Build Alternative would not address existing traffic congestion and safety hazards that are linked with existing land use patterns along I-270 and US 15. The No-Build Alternative would actually have an adverse impact on existing land use patterns.

In general, the proposed project would support the existing land use and travel patterns. It is being designed to address changes in traffic patterns and volumes anticipated in association with growth in development along the study corridor.

The proposed park and ride facility located at US 15 and Monocacy Boulevard is now a part of a separate project for the US 15/Monocacy Boulevard interchange. The park and ride has been moved from the west side of US 15 to the east side of US 15. The new site for the park and ride is undeveloped, and although zoned for agricultural use, is currently not actively farmed. It could be potentially developed in the future for low-density residential use (not reserved as open space). The park and ride would encourage carpooling and vanpooling, and serve existing neighborhoods and approved future developments to the south and east.

*Mitigation:* None required or proposed





Planned and Programmed Development

The planned and programmed development projects listed in *Table IV-1* and *Table IV-2* have been approved for construction by the local governments and are not impacted by the I-270 and US 15 highway alternatives (build or No-Build). Developments adjacent to the proposed CCT have been designed and approved by local governments to not preclude the master plan right-of-way as a BRT or LRT transitway.

The direct access express toll lane (ETL) ramps to proposed Metropolitan Grove Road Extended would not affect the approved Casey West/Watkins Mill development in Gaithersburg. The ramps would enhance access and travel convenience for residents.

Consistency with Smart Growth Initiatives and Long Range Plans

Both the No-Build and Alternatives 6A/B and 7A/B do not conflict with policies and goals of the Smart Growth Areas Act. The Act calls for locating new infrastructure in areas targeted for growth and away from areas to be preserved at existing development intensities. As both the No-Build and Build Alternatives concentrate new infrastructure in close proximity to the existing I-270 and US 15 corridor and to serve targeted, anticipated growth areas, they do not conflict with any Smart Growth initiatives.

The No-Build Alternative is not consistent with local master plan recommendations for future land use. The No-Build Alternative would not address traffic congestion and safety hazards along I-270 and US 15 that will occur with the planned growth in the corridor. Also, many of the adopted master plans and current development patterns have already considered the proposed highway and transit improvements within the corridor and the potential for increased development that could result from these improvements.

Alternatives 6A/B and 7A/B would be consistent with adopted local master plans. These plans include policies and guidelines that accommodate the potential increased development that could result from the proposed highway and transit improvements.

Alternatives 6A/B and 7A/B would have direct impacts in terms of consistency with local land use policy with the following exception. Local master plans already consider the interchange improvements proposed at Newcut Road, Monocacy Boulevard, Biggs Ford Road, and MD 75. These “master-planned” interchanges include the proposed highway improvements and recommended local land use and future development patterns. The proposed interchange improvements support the vision for future land use contained in these local plans.

Mitigation: None required or proposed.

Active Farmlands

The AD-1006 Farmland Conversion Impact Rating (FCIR) is used by federal agencies who wish to convert farmland to nonagricultural uses. Calculations on the form result in a farmland conversion impact rating which assesses the non-monetary value of farmlands to be converted. **Appendix C** of this document contains the initial FCIR CPA-106 form, coordinated through the state/county Natural Resources Conservation Service (NRCS), and responses received to date. Impacts to prime farmland soils are discussed in detail in the **Natural Resources** section of this chapter.

The No-Build Alternative would not impact farmland since it does not include any new roadway or transit construction.

Alternatives 6A/B and 7A/B would impact active farms located near the I-270/US 15 Corridor. Most impacts would consist of small strips of land located near the existing roadway. The ability to actively farm these lands could remain. Slightly larger impacts would occur to two farms located on either side of US 15 at the proposed US 15/Biggs Ford Road interchange and proposed park and ride lot.

Mitigation: Coordination through the FCIR CPA-106 form to ensure a process of local coordination and compensation, if called for, for loss of active farmland.

B. Social Environment

The purpose of this section is to present the existing social environment in the I-270/US 15 Multi-Modal Corridor Study. The section includes data for the Metropolitan Washington Region, Montgomery and Frederick counties, and the project study area as extracted from the Metropolitan Washington Council of Governments (MWCOG) Round 6.4a Cooperative Forecasting model and the 2000 US Census, including information about population and households, household income and race characteristics. The discussion compares the growth of Montgomery and Frederick Counties to the Region’s growth and presents information about the existing neighborhoods, communities, community facilities and services, and parks and recreational facilities in the project area. Potential impacts and benefits are also presented in this section. The assessment of potential impacts and benefits of each alternative also includes displacements

and relocations and an assessment of effects to environmental justice (EJ) populations. Potential impacts to these resources are discussed along with any avoidance, minimization and/or mitigation measures.

Population and Households

The 2002 DEIS presented population and household data based on the 1990 US Census. This document uses data from the 2000 US Census. The study area for the project, shown in *Figure IV-4 (Sheets 1 and 2)*, is the same as that used in the DEIS and includes census tracts and block groups that include and surround the I-270/US 15 and CCT corridors.

*Table IV-4* summarizes the population and household characteristics for the Metropolitan Washington Region, Montgomery County and Frederick County.

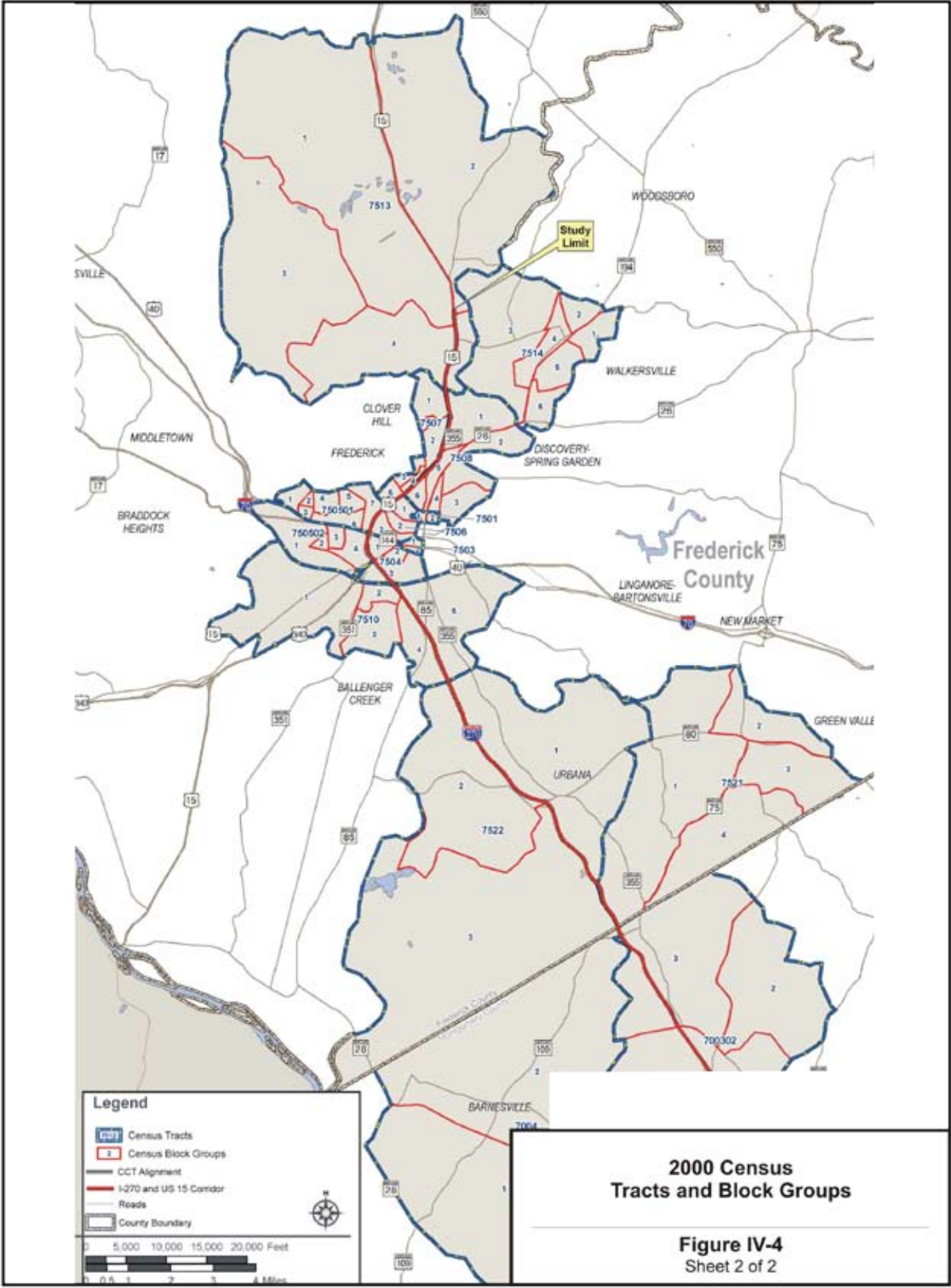
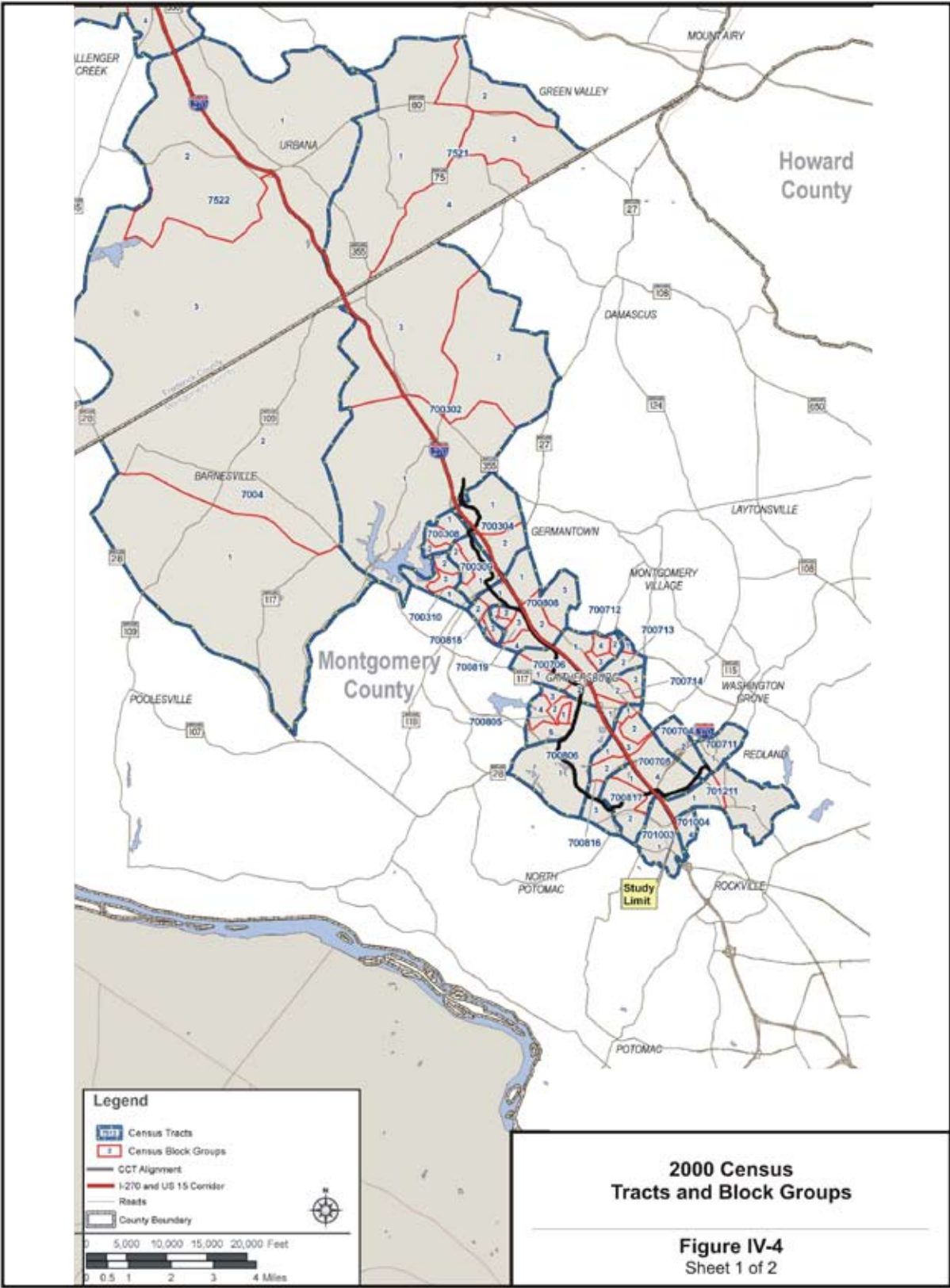
Table IV-4: Population and Household Characteristics

	1990	2000	2010	2020	2030	PERCENT CHANGE 2000-2030
Metropolitan Washington Region						
Population (in rounded millions)	3.9	4.6	5.4	5.9	6.2	35%
Number of Households (in rounded millions)	1.5	1.7	2.0	2.3	2.4	41%
Average Household Size <sup>1</sup>	2.71	2.70	2.67	2.60	2.56	--
Montgomery County						
Population (in rounded millions)	0.75	0.87	1.0	1.1	1.1	26%
Number of Households (in rounded millions)	0.28	0.32	0.37	0.41	0.42	31%
Average Household Size <sup>2</sup>	2.65	2.66	2.67	2.60	2.57	--
Frederick County						
Population (in rounded millions)	0.15	0.20	0.24	0.28	0.32	67%
Number of Households (in rounded millions)	0.053	0.07	0.09	0.10	0.12	71%
Average Household Size <sup>2</sup>	2.78	2.72	2.68	2.63	2.60	--

<sup>1</sup>Reflects data for the “Washington Suburban Region” which includes Frederick, Montgomery, and Prince George’s counties, only (as of September 2005).  
<sup>2</sup>Reflects average person per household (as of October 2005).  
**Source:** MWCOG Round 6.4A Cooperative Forecasting (adopted Fall 2004). Round 6.4A reflects Census 2000 data. Forecasted estimates vary slightly from estimates in previous forecast rounds due to revised land use plans, changes to underlying assumptions, or new data.



Figure IV-4: 2000 Census Tracts and Block Groups







*Table IV-5* summarizes the general median household income and race characteristics for the Region and Montgomery and Frederick Counties.

Metropolitan Washington Region

The Metropolitan Washington Region includes the following jurisdictions: Washington, DC; the counties of Arlington, Fairfax, Loudoun, Prince William, and Stafford; and the cities of Alexandria, Falls Church, Fairfax, Manassas, and Manassas Park in Virginia; and Montgomery, Prince George’s, Calvert, Charles, and Frederick counties in Maryland. The MWCOG determined that the Metropolitan Washington Region grew by approximately 18 percent during the period from 1990 to 2000, from approximately 3.9 million to 4.6 million people. The MWCOG expects the regional population to increase by 35 percent between 2000 and 2030, reaching almost 6.2 million persons in 2030. This increase in population, which adds about 54,000 persons a year to the region, is a result of the long-term strength of the region’s economy and high rates of migration into the region.

The number of households in the Metropolitan Washington Region increased by 13 percent between 1990 and 2000 and is expected to increase by 41 percent between 2000 and 2030. The MWCOG credits the addition of more than 670,000 households between 2000 to 2030 to the growth in jobs, migration into the region, and an expected decline in household size from 2.70 to 2.56 persons per household between 2000 and 2030.

Montgomery County

Montgomery County’s population grew 16 percent between 1990 and 2000, from about 750,000 to 870,000 people. County population is expected to increase by almost 26 percent between 2000 and 2030, surpassing one million persons in 2030. The number of households is expected to increase by 31 percent between 2000 and 2030. Household size is expected to decrease between 2000 through 2030 from 2.66 to 2.57 persons per household.

The MDP indicates that Montgomery County authorized 4,950 housing units for construction in 2000 and 3,821 units in 2004 (a decrease of 23 percent). In 2004, the county had 353,051 housing units.

Frederick County

Frederick County’s population grew by approximately 30 percent between 1990 and 2000, from approximately 150,000 to 195,000 people. County population is expected to increase by 67 percent between 2000 and 2030, to almost 325,000 persons in 2030. The number of households is expected to increase by 71 percent between 2000 and 2030. Household size is expected to decrease between 2000 through 2030 from 2.72 to 2.60 persons per household.

The MDP indicates that Frederick County authorized 2,747 housing units for construction in 2000 and 1,773 units in 2004 (a decrease of 35 percent). In 2004, the county contained 81,504 housing units.

Elderly and Disability Population Characteristics

*Table IV-6* summarizes the elderly and disability characteristics of the population of Montgomery and Frederick counties and the study area. The presence of elderly and disability populations often highlights potential locations of minority and/or low-income (environmental justice, or EJ) populations. Of the total 109 block groups in the study area, all but 18 block groups had equal or higher percentages of populations with elderly persons and/or persons with disabilities than the respective county averages. The EJ analysis considers whether locations with high percentages of elderly persons and/or persons with disabilities can be characterized as areas with potentially affected EJ populations (EJ areas). Please refer to the **Environmental Justice** section in this chapter for more detail.

Table IV-5: General Race Characteristics and Median Household Income

RACE	METROPOLITAN WASHINGTON REGION	MONTGOMERY COUNTY	FREDERICK COUNTY
Total:	4,544,944	873,341	195,277
White Alone	2,437,636	518,456	172,105
Black or African American Alone	1,225,575	128,252	12,007
American Indian and Alaskan Native Alone	12,255	1,837	413
Asian Alone	319,650	97,769	3,296
Native Hawaiian and Other Pacific Islander Alone	2,572	424	45
Some Other Race Alone	11,349	2,748	157
Two or More Races	113,387	23,546	2,656
Hispanic or Latino	422,520	100,309	4,598
Median Household Income in 1999	\$64,473	\$71,551	\$60,276

Source: 2000 US Census

Table IV-6: 2000 Elderly and Disability Population Characteristics

	TOTAL POPULATION	ELDERLY POPULATION	PERCENT ELDERLY	PERSONS WITH DISABILITIES	PERCENT OF PERSONS WITH DISABILITIES
Montgomery County	873,341	97,457	11.2%	98,157	11.2%
Frederick County	195,277	18,779	9.6%	44,234	22.7%
Study Area Total	191,772	15,625	8.1%	43,323	22.6%
Montgomery County Portion	107,321	7,114	6.6%	22,358	20.8%
Frederick County Portion	84,451	8,511	10.1%	20,965	24.8%





Nearby Communities

The M-NCPPC and local planning offices in Frederick County, City of Frederick, City of Gaithersburg, and City of Rockville provided current information on communities and neighborhoods. The Montgomery County Civic Federation and the Frederick Board of Aldermen also contributed information.

Existing Conditions

This document defines neighborhoods and communities as:

- Incorporated places
- Communities identified as Corridor Cities
- Locally recognized but unincorporated neighborhoods or communities
- Neo-traditional communities – mixed-use developments that include both residential and commercial uses, may include new community facilities (i.e. community center) and/or have a homeowners association or neighborhood association formed
- Residential subdivisions of 50 lots or more that are approved and programmed or under construction.

The 2002 DEIS included most new residential subdivisions and multi-family developments as potential neighborhoods based on their concentration of new homes. Like the 2002 DEIS, this document identifies new (since 2002) areas of large-scale residential growth (defined as 50 or more homes in a single development) as potential neighborhoods. **Figure IV-5 (Sheets 1 through 5)** shows the location of communities and neighborhoods along the corridor.

Montgomery County

The 2002 DEIS identified 35 neighborhoods and/or subdivisions in Montgomery County. The county continues to see strong growth in both residential and non-residential development. New residential development is mostly concentrated in the Gaithersburg and Clarksburg areas. The following presents neighborhood and community information, by category.

*Incorporated and Unincorporated Places and Corridor Cities:* Montgomery County municipalities and unincorporated communities, including Corridor Cities, in the study area include:

- City of Gaithersburg
- City of Rockville
- Clarksburg
- Germantown
- Hyattstown
- Montgomery Village
- Shady Grove

*Neighborhoods and Neo-traditional Communities:* There are 35 neighborhoods listed in the 2002 DEIS as located in the project study area. Many have increased in intensity of development. **The Land Use, Zoning and Future Development section** in this chapter identifies five newly emerging communities within the corridor that are located in Montgomery County: Cabin Branch, Upper Rock District, Casey East, Casey West and Crown Farm.

*Subdivisions:* Most new residential subdivisions identified in the 2002 DEIS (Seneca Meadows, Martens Property, Germantown Town Center and Clarksburg Triangle) have completed construction. **Table IV-7** lists the new residential subdivisions of 50 units or more in Montgomery County in or near the corridor that have been approved since 2002.

Frederick County

*Incorporated Places and Corridor Cities:* The City of Frederick remains the only incorporated place within the I-270/US 15 Corridor in Frederick County. The city boundaries within the corridor remain the same as in 2002.

*Neighborhoods and Neo-traditional Communities:* The 2002 DEIS listed 19 neighborhoods in the Frederick County portion of the project area; many have increased in intensity of development. The Villages of Urbana, a major planned growth area south of the City of Frederick, has continued to expand. Since 2002, the City of Frederick has formed 12 Neighborhood Advisory Councils (NAC). Each NAC area closely overlaps with established voting districts and census tracts. Seven of the NAC areas either touch or fall partially within the

Table IV-7: New Subdivisions in the I-270/US 15 Corridor in Montgomery County–2002-2006

NAME	LOCATION	TOTAL UNITS
Summerfield Crossing; Linthicum Property	Old Baltimore Road, Clarksburg	418
Woodcrest	Frederick Road north of Clarksburg Road, Clarksburg	86
Clarksburg Ridge	Clarksburg Road west side of Columbia Drive, Clarksburg	159
Highlands at Clarksburg	SE quadrant of Frederick Road at Clarksburg Road, Clarksburg	594
Gateway Commons	Hammerhill Road and Frederick Road, Clarksburg	292
Observation Heights Woods	70 West Deer Park Road, Gaithersburg	130

I-270/US 15 Corridor. The NACs recommend solutions to neighborhood, traffic, safety, zoning, and capital improvements issues, and comment on development review requests and Board of Appeals cases.

*Subdivisions:* Most residential subdivisions identified in the 2002 DEIS (Prospect View, Fairfield, Tuscarora Knolls, Willowbrook, and Wormans Mill Pond) have completed construction. There are no new residential subdivisions of 50 lots or more in Frederick County approved since 2002.

Impacts and Mitigation

Alternatives 6A/B and 7A/B will result in greater transportation mobility and access for residents. Enhanced mobility mean that residents will have a greater range of choice and access to employment centers, shopping areas, public facilities and services including health care, and recreational facilities. Alternatives 6A/B and 7A/B would create visual effects due to the presence of additional pavement and ramps. The most visual effects will occur near transit stations. There will be residential displacements adjacent to the existing highway and at station sites. There will be noise impacts to residences adjacent to the highway and transitway alternatives.

Alternative 1: No-Build Alternative

Alternative 1, the No-Build Alternative, would have an impact on community sustainability and access, as it would not address the growing congestion and safety hazards along I-270 and US 15.

Alternatives 6A/B and 7A/B

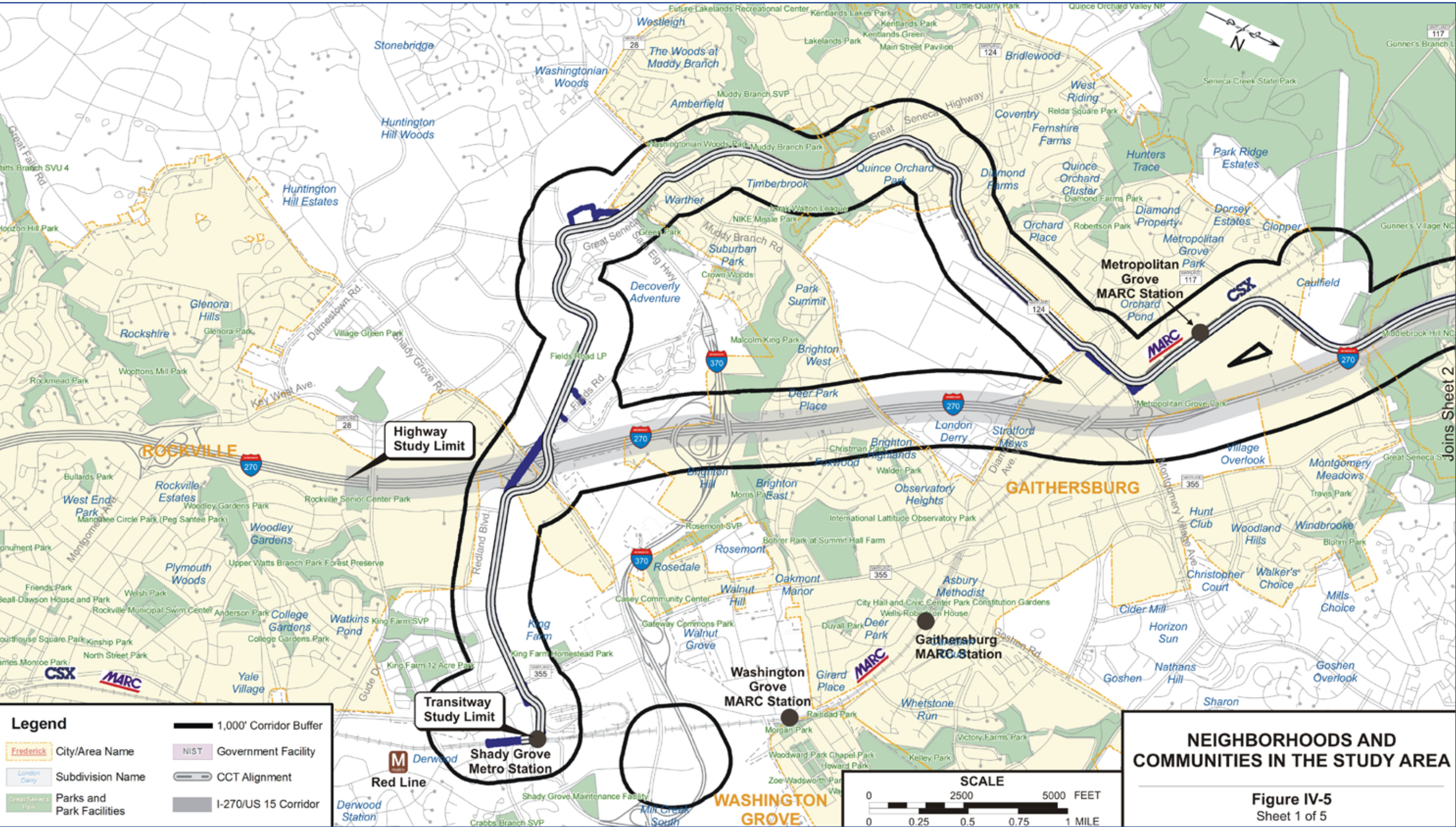
If a build alternative is selected as the preferred alternative, then temporary effects to neighborhoods and communities during the construction phase will occur from traffic lane diversions, possible loss of parking, and noise, vibration and airborne dust from construction equipment and materials.

Highway Alignment

The highway alignment will displace a large number of residences and requires minor property takings along I-270. Overall, these displacements will have limited impacts on cohesion due to their locations at the outside boundaries of the affected neighborhoods or communities as defined for this analysis. Yet, as the project displaces some properties, their physical removal will, in turn, expose other residences to the newly widened highway. These remaining residents may experience more noise, light, and an altered visual setting as a result of the increased exposure to the



Figure IV-5: Neighborhoods and Communities in the Study Area





### Figure IV-5: Neighborhoods and Communities in the Study Area

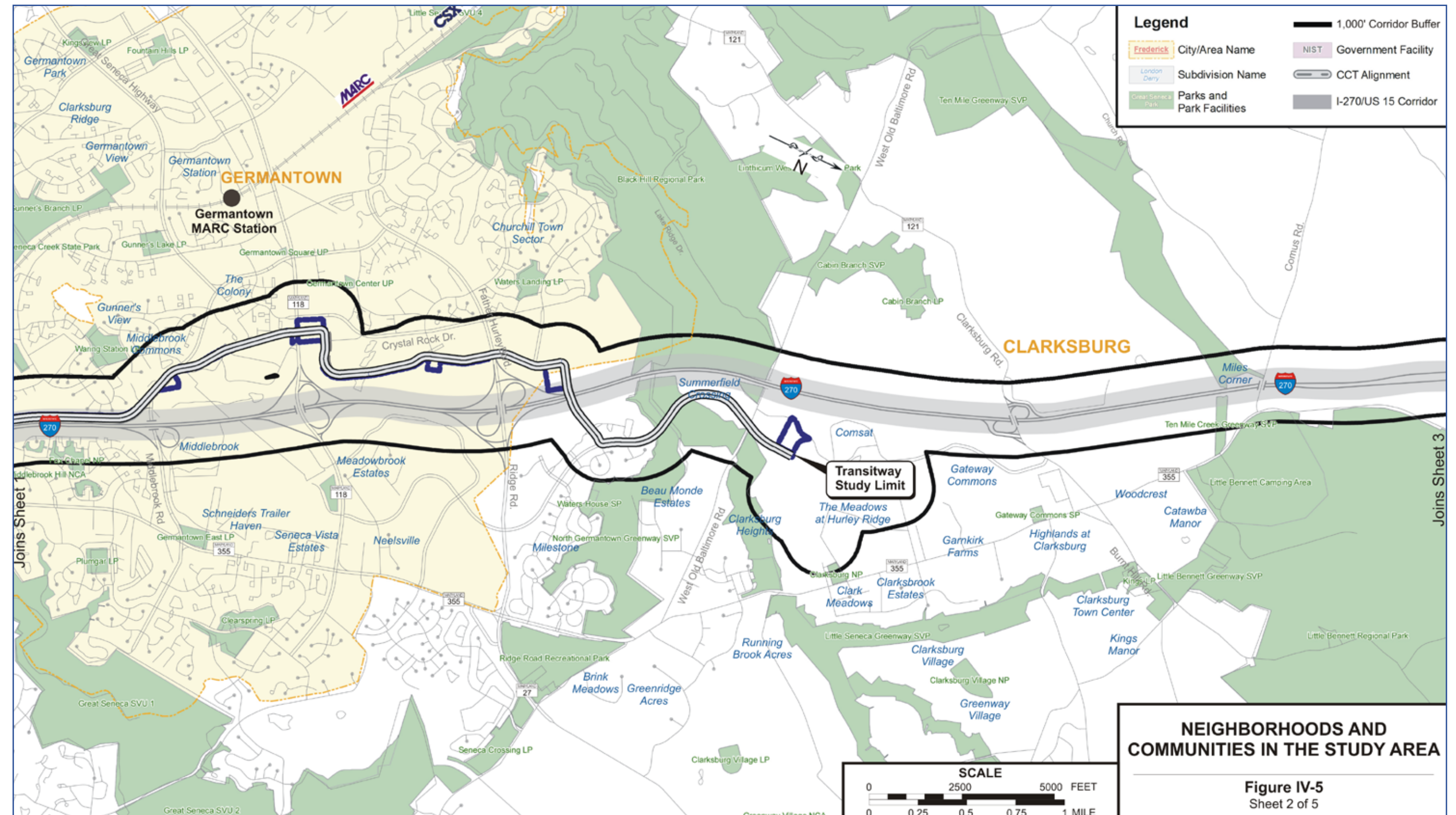




Figure IV-5: Neighborhoods and Communities in the Study Area

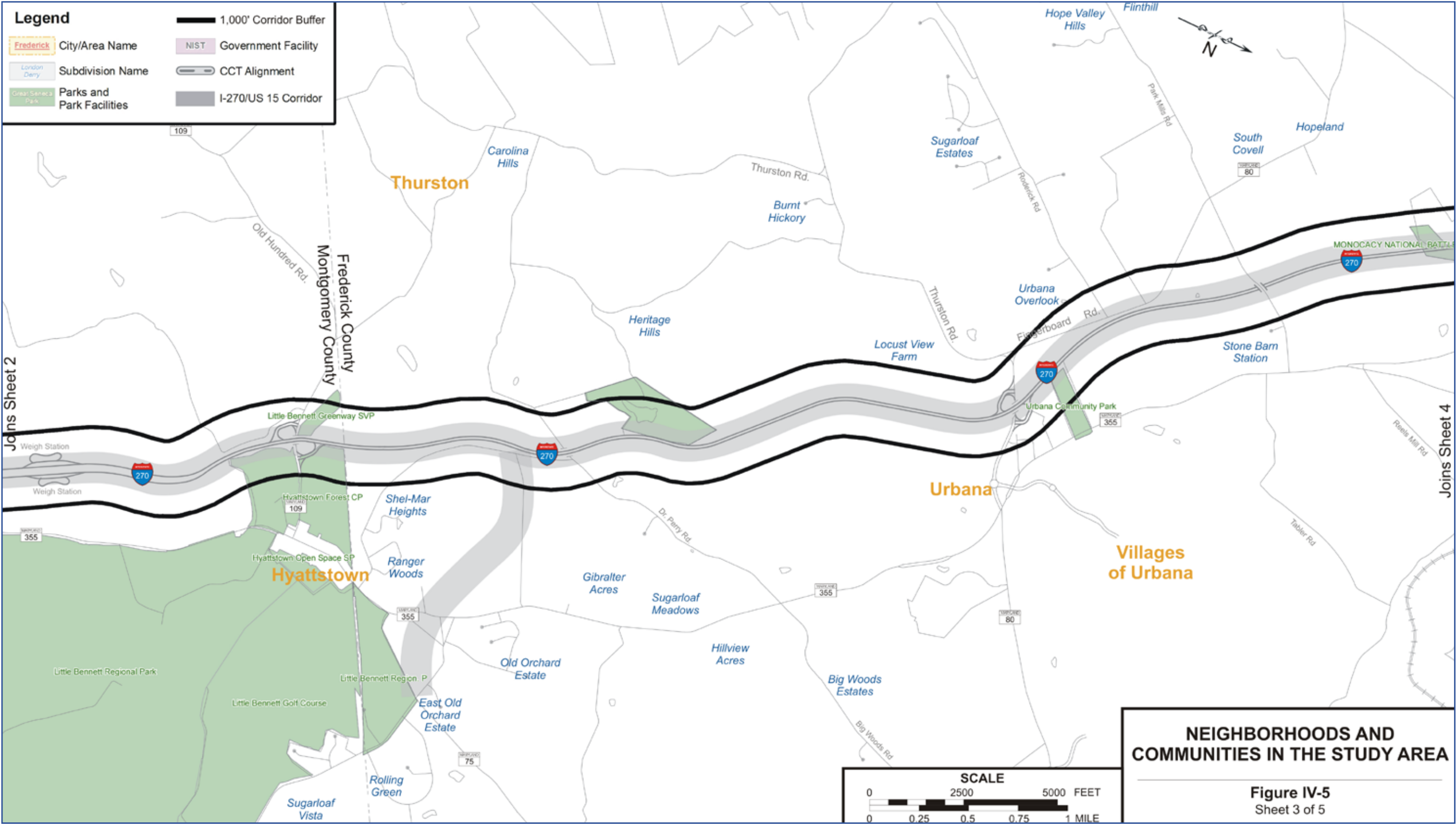




Figure IV-5: Neighborhoods and Communities in the Study Area

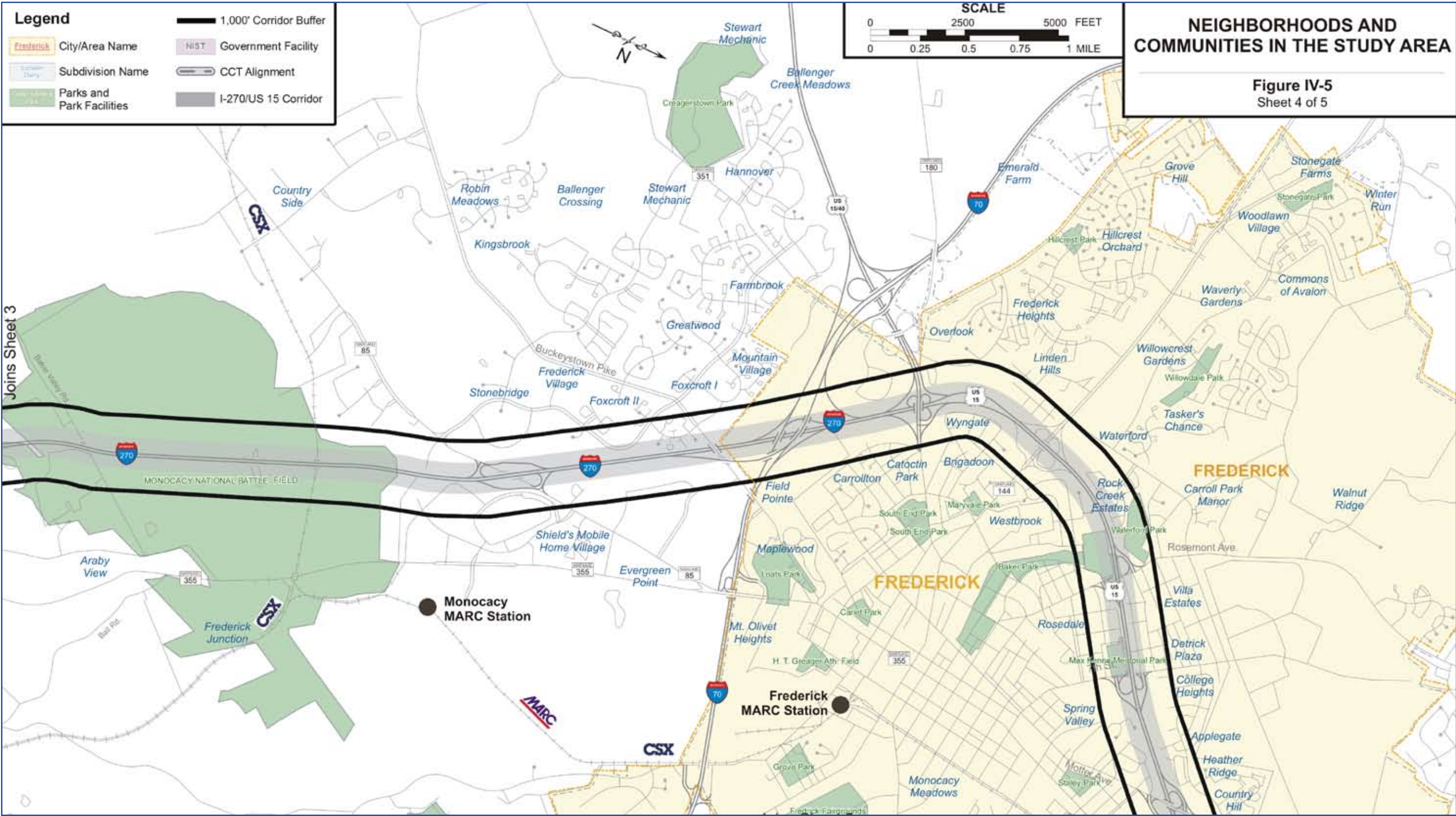
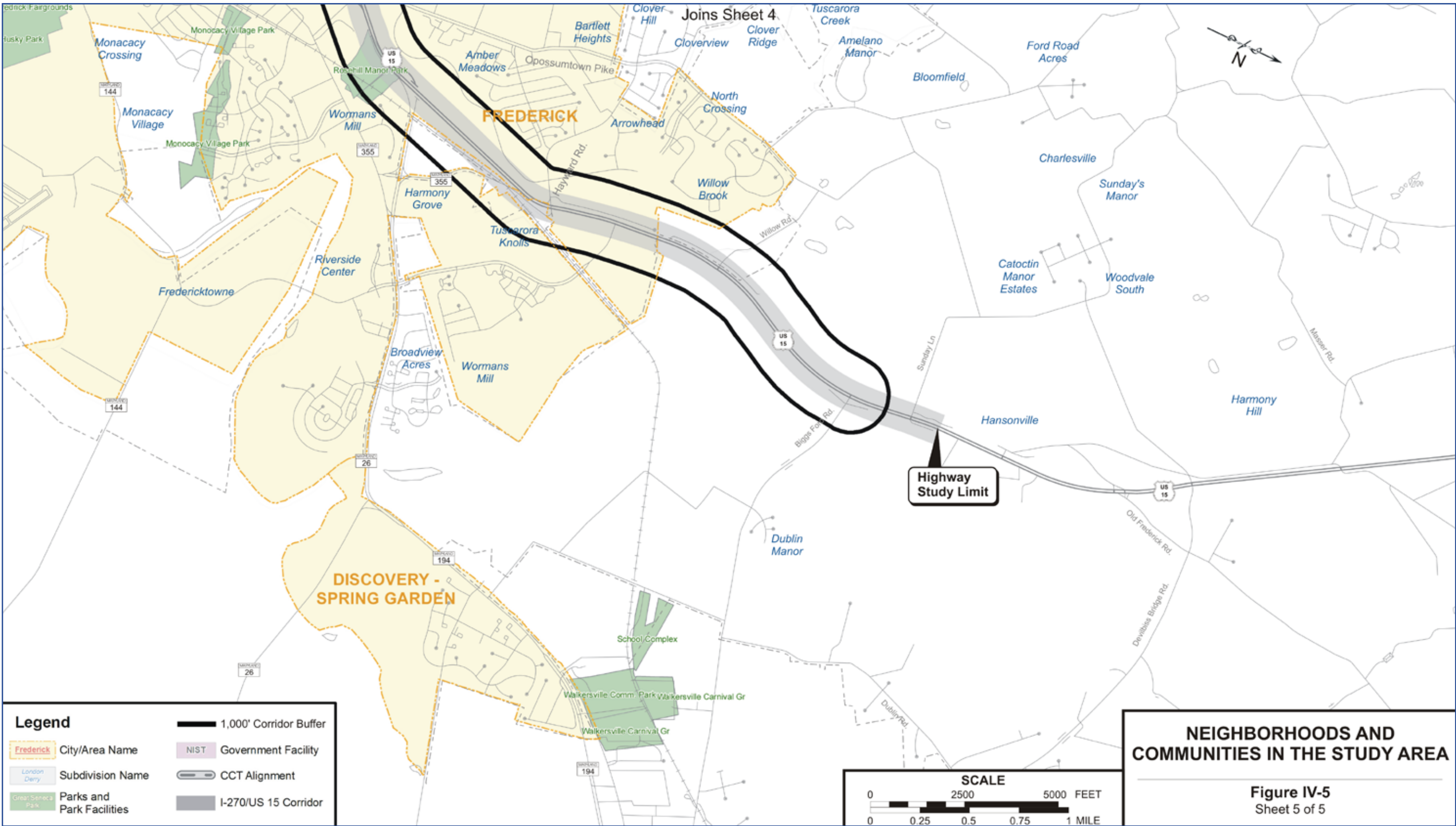




Figure IV-5: Neighborhoods and Communities in the Study Area





new improvements. In addition, the loss of residences may have an indirect impact on neighborhood social interaction and sense of unity as some neighbors are relocated.

*Transitway Alignment*

The proposed transit lines and stations would benefit the communities in Montgomery County by providing enhanced access to employment and activity centers. The transitway stations would serve the communities and support transit-oriented development in those areas along the corridor for which it is appropriate.

At transitway stations, pedestrians would have to cross the tracks or roadway to reach the opposite platform. Since the transitway would be close to residential areas, there is a potential safety concern in areas where residents might attempt to cross the transitway.

*Potential Mitigation Measures*

Retaining walls and smaller highway shoulders to reduce the number of potential displacements will be evaluated during final design. Noise barriers and landscaping will be considered to minimize potential visual and noise impacts to neighborhoods and communities.

The transitway stations, alignment, and potential operations and maintenance (O&M) facility sites would be designed to complement surrounding communities as much as possible. Safety fencing, warning signs, lighting, and other measures would lessen potential accidents. Educational awareness programs, provided by the transit agency, would help familiarize area residents, school officials, emergency response authorities and students with transit operations and safety plans. To increase safety at stations, signs and crosswalks would direct pedestrian movements at each end of the stations and discourage crossings at locations other than the station platforms. For LRT, gates and pavement markings would prevent access to the track from an approach walk. The transitway operator’s on-board signals would be used to alert patrons to oncoming transit vehicles.

Community Facilities and Services

Existing Conditions

The I-270/US 15 Corridor is home to a wide array of community facilities and services. These are resources that support community safety, cohesion, and quality of life. **Figure IV-6 (Sheets 1 through 5)** shows the locations of these existing resources within the corridor. There are 12 schools, two libraries, 16 places of worship, three post offices, six public safety departments (police/fire/rescue), and eight hospitals within the corridor. These were identified in the 2002 DEIS. Some new community facilities have been constructed in the study area since 2002 and a number are planned or programmed for construction. **Table IV-8** lists the new community facilities in or near the study area since the 2002 DEIS.

Impacts and Mitigation

Alternatives 6A/B and 7A/B would provide additional access points for emergency vehicles through the introduction of new interchanges and service roads, and allow for shorter response times by easing congestion. No adverse change to direct access is expected to any community facility or resource.

Alternative 1: No-Build Alternative

Alternative 1, the No-Build Alternative, could have a minor adverse impact to the effective functioning of public safety facilities in the corridor as response times may be slowed by continued growth in traffic and congestion on I-270, US 15 and its interchanges and associated approach roads.

Alternatives 6A/B and 7A/B

The impacts to community facilities of Alternatives 6A/B and 7A/B would include the acquisition of land from several community resources including one cemetery, one planned police station, the Montgomery County Correctional Facility, two schools, one church, one fire station, and two government facilities. None of these takings will affect the activities of these facilities. The alternatives may impact the access road to the Montgomery County Correctional Facility. Refer to the

Table IV-8: Newly Built, Planned, or Programmed Community Facilities in the I-270 Corridor

FACILITY TYPE	STATUS	LOCATION
Montgomery County		
Clarksburg High School	Opened 2006	MD 355 (22500 Wims Road), Clarksburg
Fire Station	Programmed	MD 355 at MD 121, Clarksburg
Fire Station	Programmed	Near the fire academy on Key West Road in Gaithersburg
Fire Station	Planned	Gateway Center Drive in Gaithersburg
Senior Center	Planned	Casey East development
6 <sup>th</sup> District Police Station	Planned	NW corner of Watkins Mill Road and proposed I-270 on-ramp., Casey East property, Gaithersburg
High School	Planned	Washington Boulevard at Fields Road, Crown Farm, Gaithersburg
Regional Library	Opened 2007	19840 Century Boulevard, Germantown
Frederick County		
Urbana District Park	Under construction	Urbana Pike and Tabler Run
Centerville Elementary School	Opened 2005	East of Urbana High School along Fingerboard Road (MD 80)
Urbana Middle School	Opened 2006	Pontius Court, Ijamsville
Crestwood Middle School	Opened 2004	Foxcroft Drive, Frederick
Middle School and Police Station	Planned	New Design Road – Frederick
Library and community center	Under construction	Villages at Urbana near the MD 80/355 junction

**Section 4(f) section** in this chapter for a description of impacts to the Urbana Elementary School recreation area.

Potential avoidance/minimization efforts will include the evaluation of retaining walls, reduced shoulder widths and minor shifts in alignments during the final design effort to avoid or minimize impacts.



Figure IV-6: Community Facilities and Services

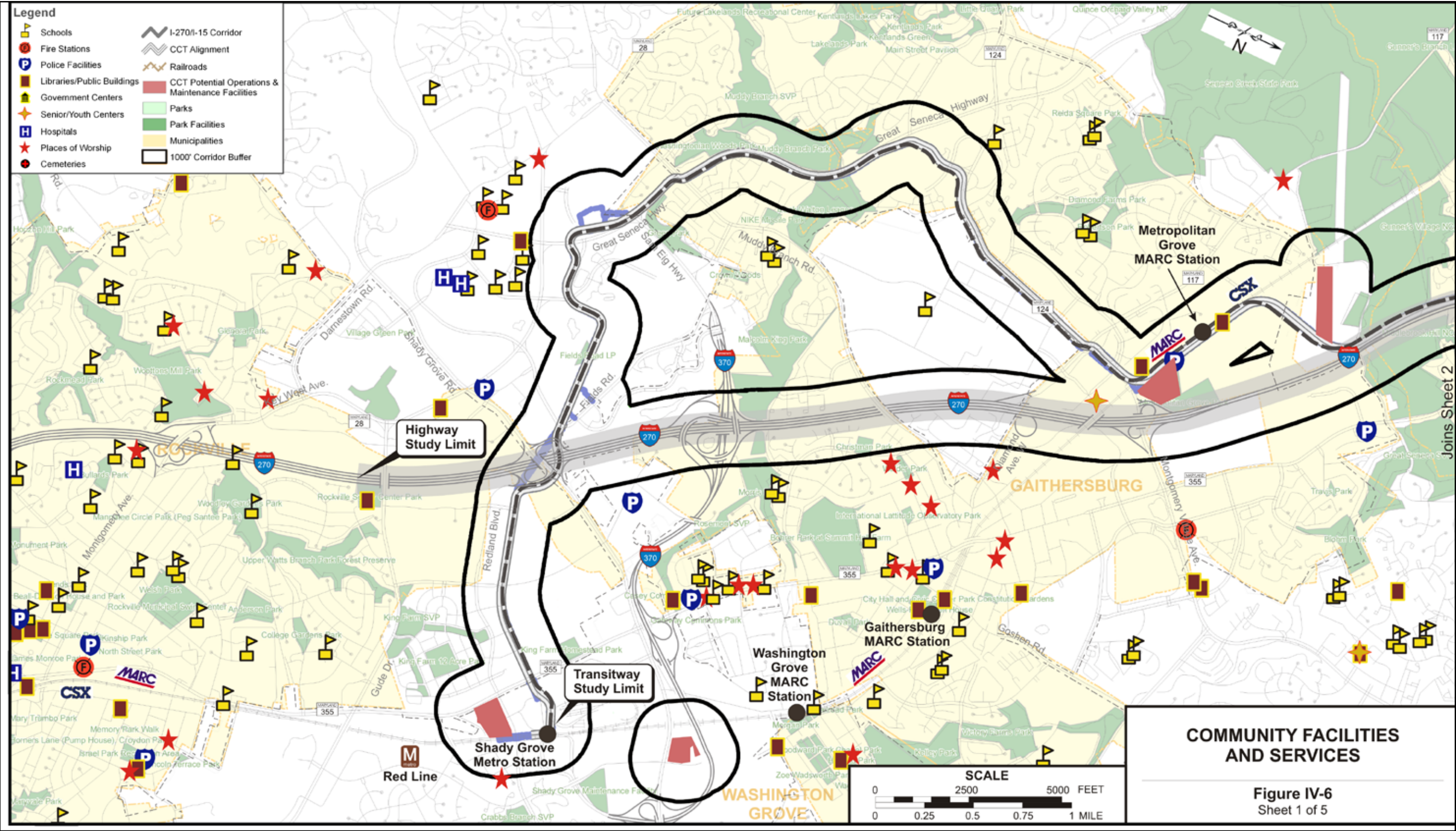




Figure IV-6: Community Facilities and Services

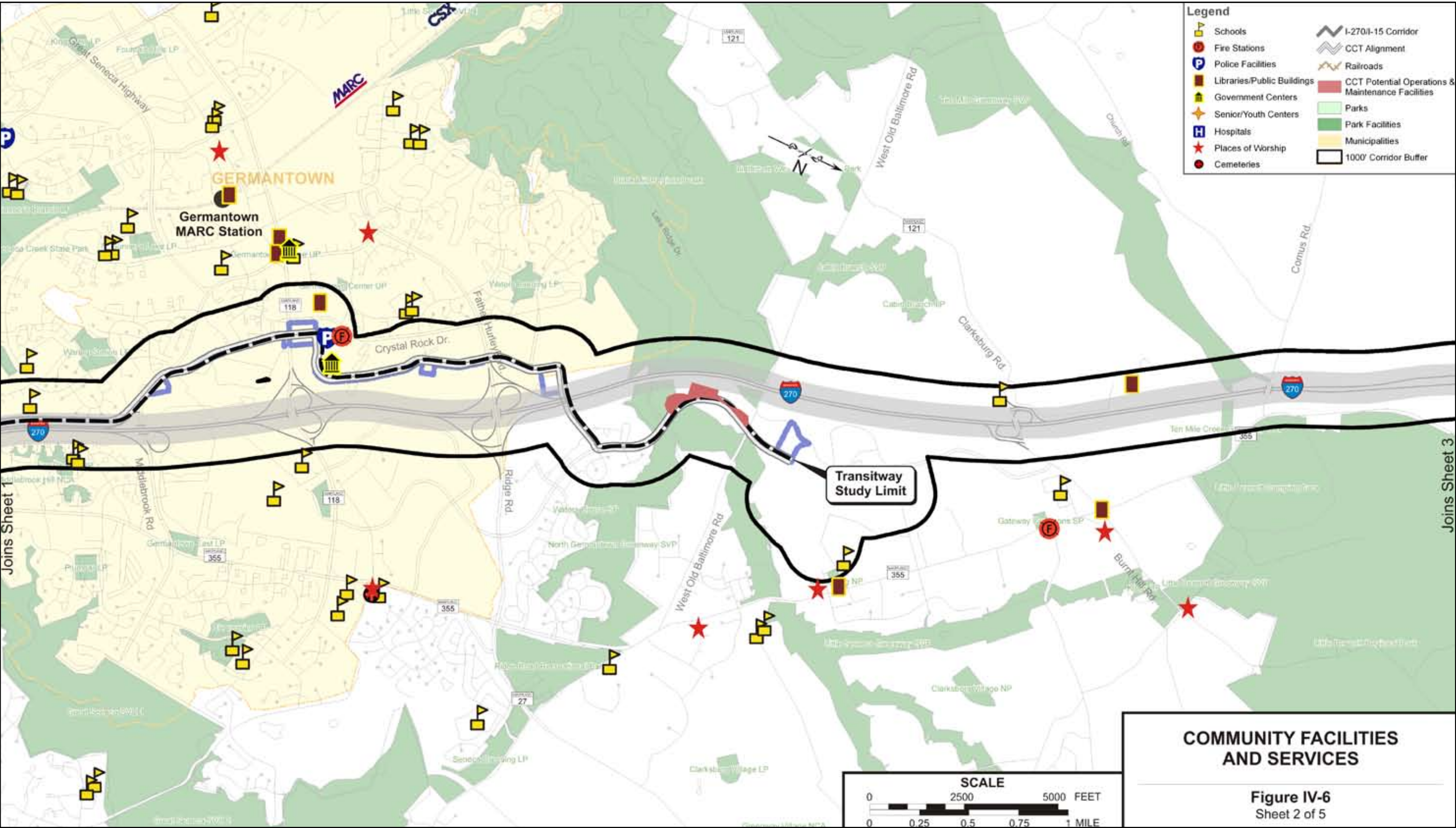




Figure IV-6: Community Facilities and Services

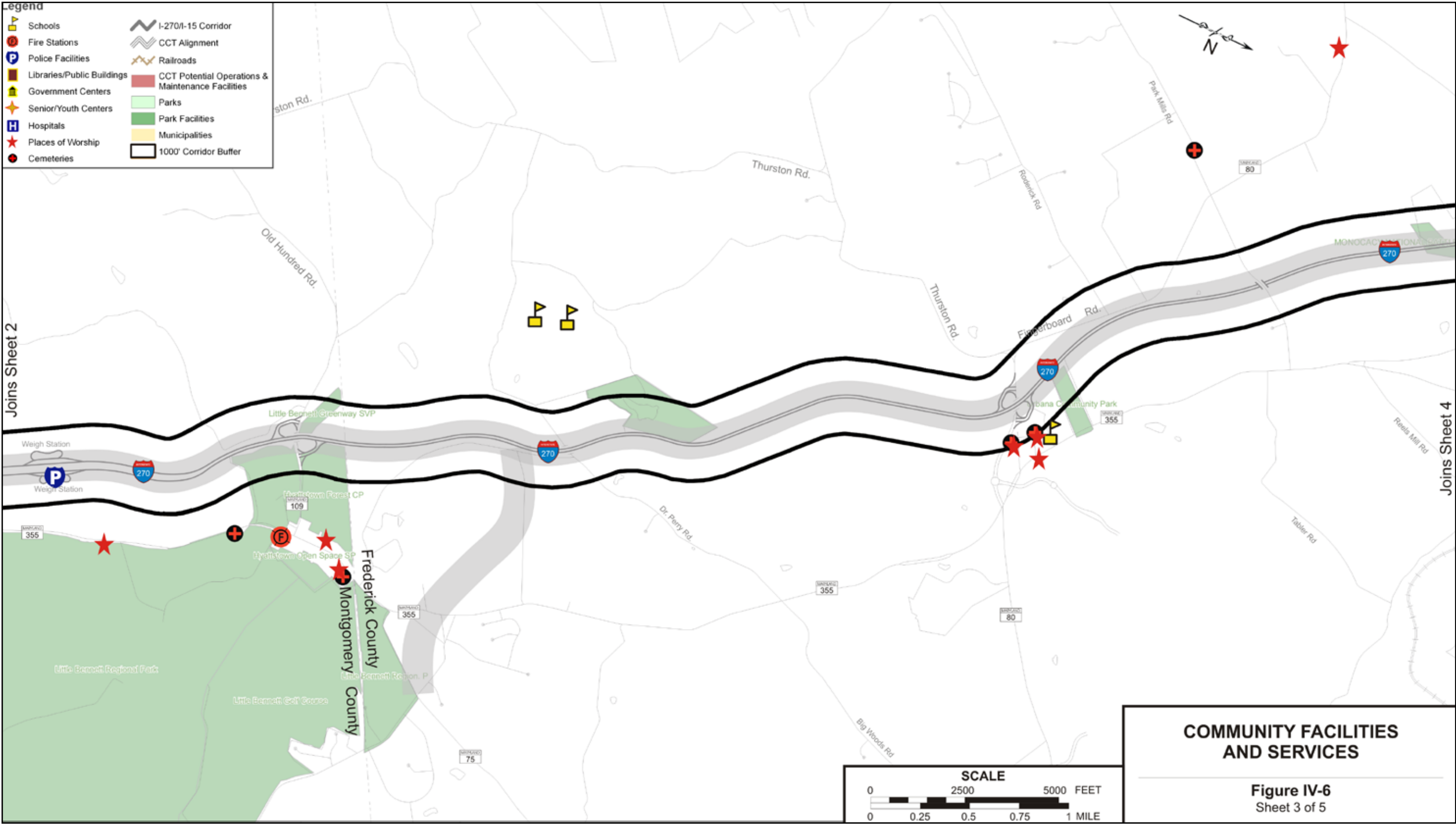




Figure IV-6: Community Facilities and Services

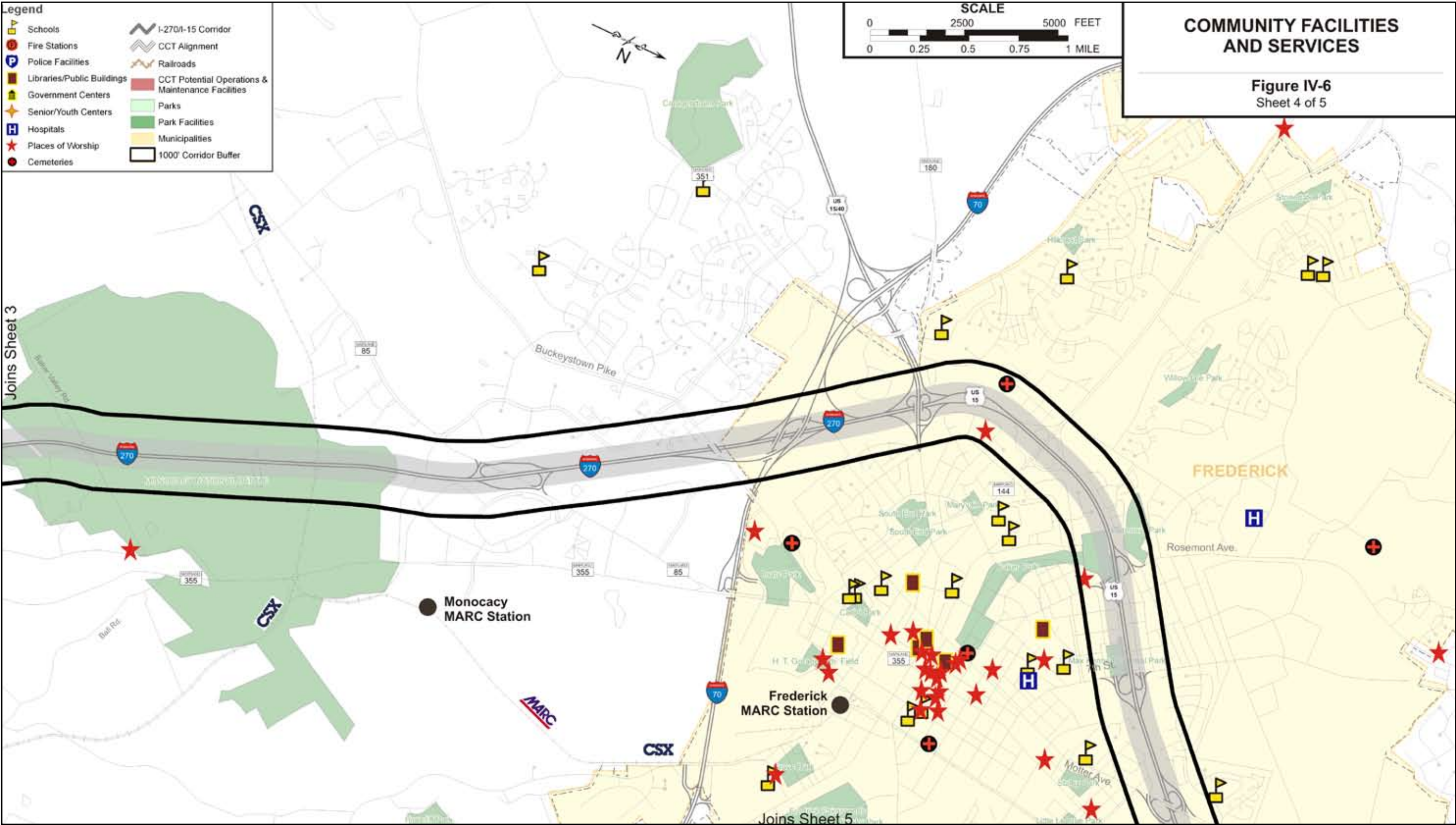
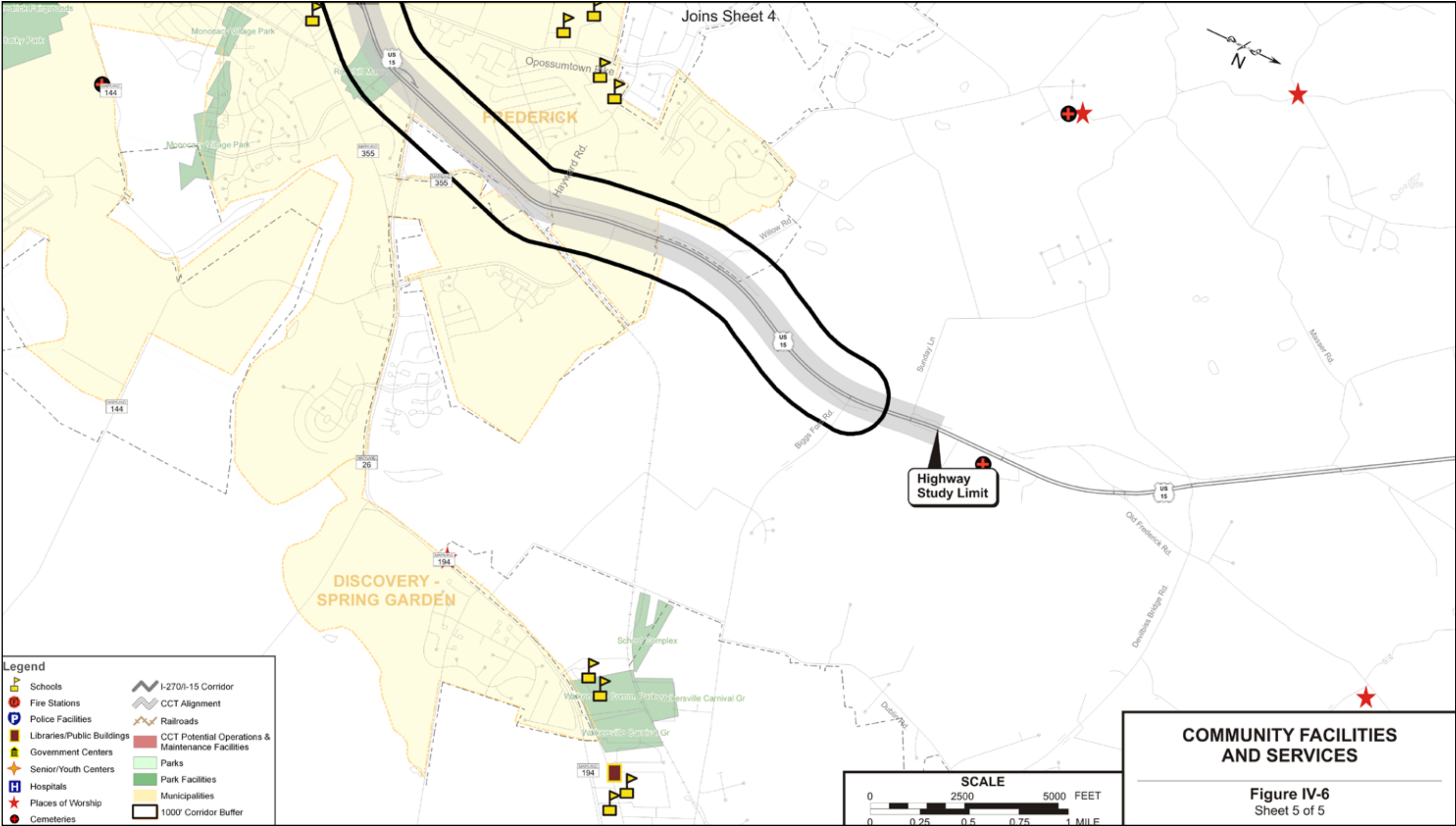




Figure IV-6: Community Facilities and Services







Parks and Recreational Facilities

Existing Conditions

The I-270/US 15 Multi-Modal Corridor contains many park and recreational facilities that offer a diverse range of activities. *Table IV-9* and *Figure IV-6 (Sheets 1 through 5)* show the parks and recreational facilities located adjacent to, or within a 1,000-foot buffer of, the proposed improvements. More extensive descriptions of each park/recreational facility are included in the 2008 SETR.

Montgomery County

Seventeen parks/recreational facilities are located within the project study area in Montgomery County, including three of the largest parks in the Corridor: Seneca Creek State Park, Little Bennett Regional Park and Black Hill Regional Park. A number of bikeways and trails exist or are planned in the I-270/US 15 Corridor as well. Local master plans encourage the provision of new recreation areas and open space within new developments.

Frederick County

Eleven parks/recreation areas are located within the project study area in Frederick County. The largest park, Monocacy National Battlefield Park, is bisected by I-270. Pedestrian and bicycle facilities are also being planned for existing and new communities. Refer to the 2008 SETR for more detailed information.

Impacts and Mitigation

The No-Build Alternative will not affect any parks and recreational facilities along the project corridor.

Alternatives 6A/B and 7A/B may require potential property acquisition from 13 public parks and recreational areas within the corridor, shown in *Table IV-10*. Potential impacts include loss of acreage and loss of buffer landscapes adjacent to the highway/transitway. A full discussion of potential parks impacts and avoidance and minimization measures being considered is included in the Section 4(f) section of this Chapter.

Table IV-9: Parks and Recreational Facilities within the Project Study Area

NAME OF PARK	AMENITIES	SIZE (ACRES)	JURISDICTION
King Farm Public Park System (King Farm Homestead Park, Stream Valley Park (SVP))	Passive parkland (47 acres) and active uses (45 acres) including athletic fields, tennis courts, basketball, playgrounds, picnic areas	92	City of Rockville
Green Park	Tot lot, play area, basketball courts, tennis court, hiking trails, dog exercise area	14	City of Gaithersburg
Washingtonian Woods Park	Play area, a half basketball court, tennis courts, hiking trails	22	City of Gaithersburg
Muddy Branch SVP/ Lakelands Development	Passive park, trails		City of Gaithersburg
Diamond Farms Park	Tennis courts, basketball courts, handball/tennis practice wall, tot lot, picnic tables, play equipment	23	City of Gaithersburg
Morris Park	Basketball, baseball and soccer fields, playground, tennis courts, picnic tables	37	City of Gaithersburg
Malcolm King Park	Basketball and tennis courts, playground, picnic tables, hiking trail	73	City of Gaithersburg
Christman Park	Picnic tables, fishing pond	4	City of Gaithersburg
Metropolitan Grove Park	Undeveloped		City of Gaithersburg
Great Seneca SVP	Hiking trails	1,649	Montgomery County
Seneca Creek State Park	Biking, hiking and riding trails, boating, skiing, fishing, canoeing, hunting, playground, visitor's center with exhibits	6,290	Maryland Department of Natural Resources (MDNR)
Middlebrook Hill Park	Undeveloped	12	M-NCPPC
Fox Chapel Park	School, playground, softball field, tennis court, picnic area and shelter	16	M-NCPPC
Waring Station Local Park	Soccer, playground, basketball, multi-use field	17	M-NCPPC
North Germantown Greenway SVP	Undeveloped	300	M-NCPPC
Black Hill Regional Park	Playground, picnic areas, lake, visitor's center, exhibits	1,843	M-NCPPC
Little Bennett Regional Park	Camping, trails, golf course	3,648	M-NCPPC
Urbana Lake Fish Management	Undeveloped	70	MDNR
Urbana Elementary School	Ball field, soccer field, tennis/basketball courts, playground	21	Frederick County
Urbana Community Park	Pavilions, picnic tables, baseball, soccer fields, playground, tennis courts	20	Frederick County
Monocacy National Battlefield	Auto tour and walking trails, visitor center with exhibits	1,920	National Park Service
Linden Hills Neighborhood Park	Playground	0.2	Frederick City
Waterford Park	Undeveloped	18	Frederick City
Baker Park	Playground, tennis courts, softball, football, pavilion	53	Frederick City
Apple Avenue Park	Undeveloped	2	Frederick City
Max Kehne Park	Ball fields, tennis, playground, pavilion	9	Frederick City
Rosedale Park	Pavilion restrooms, playground equipment, basketball	3	Frederick City
Rose Hill Manor Park	Carriage, farm, and children's museums, history tours	43	Frederick County

Table IV-10: Impacts to Parks and Recreational Facilities

PARK/RECREATION FACILITY	SIZE (ACRES)	ALTERNATIVE 6A/B OR 7A/B IMPACTS (ACRES)
Morris Park	37.2	0.21
Malcolm King Park	72.9	0.75
Seneca Creek State Park	6,290	12.09*
Middlebrook Hill Park	11.5	2.13
North Germantown Greenway	300	0.78
Black Hill Regional Park	1,843	8.61
Little Bennett Regional Park	3,648	0.29
Urbana Fish Lake Management Area	70	1.23
Urbana Elementary School	21	1.78
Urbana Community Park	20	0.44
Monocacy National Battlefield	1,647	14.50
Baker Park	53	0.26
Rose Hill Manor Park	43	1.04

All impacts represent use of a 2:1 slope design for roadway embankment.  
\* Includes both transitway and highway impacts.





Displacements and Relocations

An analysis of the potential residential and business displacements that would result from Alternatives 6A/B and 7A/B was based on preliminary right-of-way estimates. If a build alternative is selected, the number of actual displacements may vary from those presented due to refinements in both the design and right-of-way requirements that will occur during the detailed engineering phase of this project. *Tables IV-11 and IV-12* summarize the potential residential and business displacements that may occur because of the construction of Alternatives 6A/B or 7A/B. The potential displacements are the same for either alternative, as the physical footprint of the alternatives is identical. The locations of potential displacements are identified on the *Plan Sheets* in **Appendix A**. There are no displacements required for the No-Build Alternative.

The I-270/US 15 Corridor highway and transit improvements have been planned to minimize property acquisitions and relocations. Though the highway and transitway alignments travel along existing streets and undeveloped parcels for much of their length, there are areas along I-270, particularly between I-370 and Muddy Branch Road, that contain large numbers of displacements. Construction of a retaining wall in certain locations could reduce the number of displacements. The project team will continue to coordinate with municipalities during the planning phase of this project as property acquisitions are subject to change as the project plans are refined.

Relocation Process

Affected property owners will receive relocation assistance in accordance with federal and/or state requirements depending on the funding source. The Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, with implementing regulations at 49CFR Part 24, requires that the project shall not proceed into any phase that will cause the relocation of any persons or businesses or proceed with any construction project, until it has furnished assurances that all displaced persons will be satisfactorily relocated to comparable decent, safe and sanitary housing within their financial means, or that

Table IV-11: Summary of Residential Displacements – Alternatives 6A/B and 7A/B

LOCATION	PLAN SHEET COUNTY Appendix A	MAXIMUM DISPLACEMENTS WITHOUT MINIMIZATION	MINIMIZED DISPLACEMENTS WITH MINIMIZED SHOULDERS AND/OR RETAINING WALLS <sup>1</sup>
Highway Residential Displacements			
I-270 Southbound, North of I-370 Brighton West Townhouses	HWY 1 (Montgomery)	81 residences	6 - 10 residences
I-270 Northbound, North of I-370 (with I-370 direct access ramps) Fireside Condominiums	HWY 1 (Montgomery)	0 residences <sup>2</sup>	0 residences <sup>2</sup>
I-270 Northbound, South of MD 117 London Derry Apartments/ Montgomery Club	HWY 2 (Montgomery)	150 residences	0 - 61 residences <sup>3</sup>
I-270 Southbound, South of Great Seneca Creek/ Game Preserve Road	HWY 2 (Montgomery)	1 residence <sup>4</sup>	0 residences
I-270 Northbound, North of Great Seneca Creek Fox Chapel	HWY 3 (Montgomery)	0 residences <sup>5</sup> (retaining wall included in conceptual design)	0 residences <sup>5</sup>
I-270 Northbound, South of Comus Road	HWY 6 (Montgomery)	2 residences	1 residence
I-270 Southbound, South of Comus Road	HWY 6 (Montgomery)	1 residence	1 residence
I-270 Southbound, North of MD 80 interchange Fingerboard Road Residence	HWY 9 (Frederick)	1 residence	1 residence
I-270 Southbound, South of I-70 Princeton Court Apartments	HWY 11 (Frederick)	12 residences	0 residences
US 15 Northbound, South of Rosemont Ave. Mercer Place Residences	HWY 13 (Frederick)	2 residences	0 residences
US 15 Southbound, North of Rosemont Avenue along Biggs Avenue	HWY 13 (Frederick)	1 residence	0 residences
Total Highway Residential Displacements		251 residences	9 - 74 residences
Transitway Residential Displacements			
MD 124 Eastbound between Great Seneca Highway and MD 117	TRAN 3 (Montgomery)	1 residence	1 residence
I-270 Southbound, South of Great Seneca Creek/ Game Preserve Road	TRAN 4 (Montgomery)	1 residence <sup>4</sup>	1 residence <sup>4</sup>
Game Preserve Road (Potential O&M Site, if chosen)	TRAN 4 (Montgomery)	4 residences	4 residences
I-270 Southbound, South of Middlebrook Road	TRAN 5 (Montgomery)	3 residences	3 residences
W. Old Baltimore Road (Potential O&M Site, if chosen)	TRAN 6 (Montgomery)	1 residence	1 residence
Total Transitway Residential Displacements		5 - 9 residences <sup>6</sup>	5 - 9 residences <sup>6</sup>
Highway and Transit Displacements in Montgomery County		240 - 244 residences	12 - 83 residences
Highway and Transit Displacements in Frederick County		16 residences	0 - 1 residence
Total Highway and Transitway Residential Displacements		256 - 260 residences	12 - 83 residences

Notes: <sup>1</sup>Preliminary impacts are based on both a 25-foot and a 10-foot buffer beyond the proposed cut/fill line or the proposed retaining wall respectively, as well as an assessment of minimum/maximum structure displacements for townhouse units.

<sup>2</sup>The proposed roadway would not impact the Fireside Condominium residences, however, further detailed engineering study is needed to determine if the existing highway stormwater system is adequate and the existing Fireside boiler room/distribution piping remain unaffected by EA Alternatives 6A/B and 7A/B.

<sup>3</sup>Construction of a retaining wall in London Derry would lower the number of displacements to 61 residential units. However, zero displacements would require the potential MD 117 direct access ramps be modified or not carried forward through design; shoulder widths along I-270 are minimized; and the retaining wall is constructed.

<sup>4</sup>This residence along Game Preserve Road will be impacted by the proposed highway widening without a retaining wall and would be avoided if a retaining wall were constructed; however, the transitway alignment will impact this residence under all scenarios.

<sup>5</sup>The conceptual design will require FHWA review and approval of potential design exception.

<sup>6</sup>There is a range of potential displacements since only one or possibly none of the O & M sites listed in this table will be chosen.



such housing is in place and has been made available to the displaced person. Reasonable moving expenses are also provided for displaced persons or businesses. The Federal Uniform Relocation Assistance and Real Property Acquisition Policies would be executed in a timely and humane fashion. Comparable housing and business space exists on the open market for relocation housing within the same area and can be completed with minimal effects to the economic well being of those directly affected by the project.

In the event comparable replacement housing is not available for displaced persons or available replacement housing is beyond their financial means, additional financial compensation will be provided through “housing as a last resort” to assure that comparable replacement housing of be available for displaced persons. Based on relocation studies, it is anticipated that “housing of a last resort” would be utilized to accomplish the re-housing requirements for the build alternatives under consideration. **Appendix B** of this document contains a *Summary of the Relocation Assistance Program of the Maryland State Highway Administration* – revised June 10, 2005 for further reference.

Title VI Statement

*It is the policy of the SHA and the Maryland Transit Administration (MTA) to ensure compliance with the provisions of Title VI of the Civil Rights Act of 1964, and related civil rights laws and regulations which prohibit discrimination on the grounds of race, color, sex, national origin, age, religion, physical or mental handicap or sexual orientation in all the SHA and MTA programs and projects funded in whole or in part by the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA). The SHA and MTA will not discriminate in highway or transit planning, design, construction, the acquisition of right-of-way, or the provision of relocation advisory assistance. This policy has been incorporated into all levels of the transportation planning process in order that proper consideration may be given to the social, economic and environmental effects of all transportation projects.*

Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, directs federal agencies to “promote nondiscrimination in federal programs substantially affecting human health and the environment, and provide minority and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.” The order directs agencies to ensure that:

- They do not discriminate on the basis of race, color, or national origin.
- They identify and address disproportionately high and adverse human health or environmental effects of their actions on minority and low-income communities.
- They provide opportunities for community input in the NEPA process, including input on potential effects and mitigation measures.

This EJ analysis determines whether there are disproportionately high and adverse human health and environmental effects on minority and low-income populations.

Method for Identifying EJ Populations

Executive Order 12898 does not define the terms “minority” or “low-income.” However, the Council on Environmental Quality (CEQ) describes these terms in the context of an EJ analysis. The following definitions are unique to and are the basis for the EJ analysis:

- *Minority Individual* – The US Census Bureau classifies a minority individual as belonging to one of the following groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black (not of Hispanic Origin), and Hispanic.
- *Minority Populations* – CEQ Guidelines identify minority populations where either (a) the minority population of the affected area exceeds 50 percent or (b) the percentage of a minority population in the affected area is meaningfully greater than the percentage of minority population in the general population (or other appropriate unit of geographic analysis).

Table IV-12: Summary of Business Displacements – Alternatives 6A/B and 7A/B

LOCATION	PLAN SHEET COUNTY Appendix A	MAXIMUM DISPLACEMENTS WITHOUT MINIMIZATION	MINIMIZED DISPLACEMENTS WITH RETAINING WALLS <sup>1</sup>
Highway Business Displacements			
I-270 northbound, south of I-370 (beginning of ETL facility)	HWY 1 (Montgomery)	1 business	0 businesses
I-270 southbound, north of I-370 (Festival at Muddy Branch Shopping Center)	HWY 1 (Montgomery)	3 businesses	0 - 2 businesses
I-270 southbound, north of MD 117	HWY 2 (Montgomery)	1 business	0 businesses
I-270 northbound, north of Comus Road	HWY 6 (Montgomery)	1 business	1 business
I-270 southbound at proposed MD 75 interchange	HWY 7 (Frederick)	1 business	1 business
I-270 southbound, south of MD 85	HWY 11 (Frederick)	1 business	0 businesses
US 15 southbound, north of MD 26 interchange along Thomas Johnson Drive	HWY 14 (Frederick)	2 - 3 businesses	0 businesses
Total Highway Business Displacements		10 - 11 businesses	2 - 4 businesses
Transitway Business Displacements			
Redland Road / MD 355 (Potential O&M Site – if chosen)	TRAN 1 (Montgomery)	29 businesses	29 businesses
MD 124 eastbound between Great Seneca Highway and MD 117	TRAN 4 (Montgomery)	1 business	1 business
Metropolitan Grove Road (Police Impound Vehicle Lot – Potential O&M Site – if chosen)	TRAN 4 (Montgomery)	2 businesses	2 businesses
North of MD 118 in Germantown Transit Center	TRAN 5 (Montgomery)	2 businesses	2 businesses
Total Transitway Business Displacements		3 - 32 businesses <sup>2</sup>	
Total Highway and Transitway Business Displacements		13 - 43 businesses <sup>2</sup>	5 - 36 businesses <sup>2</sup>

**Notes:** <sup>1</sup> Preliminary impact ranges are based on a 25-foot and a 10-foot buffer beyond the proposed cut/fill line or the proposed retaining wall respectively, as well as an assessment of minimum/maximum business displacements.  
<sup>2</sup> There is a range of potential displacements since only one or possibly none of the O & M sites listed in this table will be chosen.





Table IV-13: Study Area Block Groups that Meet EJ Threshold for Minority Populations

CENSUS TRACT	BLOCK GROUP	POPULATION	WHITE	BLACK	HISPANIC	AMERICAN INDIAN AND ALASKA NATIVE	ASIAN	NATIVE HAWAIIAN AND OTHER PACIFIC ISLANDER	OTHER	TOTAL MINORITY	PERCENT MINORITY
Montgomery County		873,341	564,890	130,849	100,309	2,593	97,994	489	76,526	408,760	46.8%
7007.05	2	2,195	542	350	916	0	335	0	52	1,653	75.3%
7007.05	3	2,802	909	560	979	0	302	0	52	1,893	67.6%
7007.05	4	756	335	90	190	0	129	12	0	421	55.7%
7007.06	1	1,437	683	297	192	0	165	0	100	754	52.5%
7007.06	2	1,832	727	368	323	0	275	0	139	1,105	60.3%
7007.12	1	1,848	411	527	367	0	377	0	166	1,437	77.8%
7007.14	1	2,869	971	850	494	0	495	0	59	1,898	66.2%
7008.05	1	1,298	523	195	339	0	164	0	77	775	59.7%
7008.05	2	1,343	476	401	347	0	71	0	48	867	64.6%
7008.08	1	1,127	491	150	178	0	300	0	8	636	56.4%
7008.16	1	4,133	1,110	949	1,149	18	750	0	157	3,023	73.1%
7008.16	2	1,995	906	224	519	7	261	0	78	1,089	54.6%
7008.18	1	1,988	913	381	352	0	257	0	85	1,075	54.1%
Frederick County		195,277	174,293	12,191	4,598	466	3,327	45	4,955	25,582	13.1%
7504	3	2,016	1,296	473	98	0	61	5	83	720	35.7%
7505.01	7	1,604	1,152	286	40	14	68	0	44	452	28.2%
7505.02	4	3,088	2,130	387	273	0	254	0	44	958	31.0%
7507	3	2,043	1,463	457	31	25	9	0	58	580	28.4%
7507	4	591	264	98	96	18	115	0	0	327	55.3%
7508	6	1,384	1,037	225	57	8	31	0	26	347	25.1%
7510	4	1,778	1,010	569	50	0	93	0	56	768	43.2%
7510	5	485	340	117	0	0	28	0	0	145	29.9%

Source: 2000 US Census  
Note: Table presents only those block groups that meet or exceed the minority EJ threshold population (50+ minority percentage or equal to/greater than the county minority percentage plus 10 percent, representing “meaningfully greater”) for each respective county.

- *Low-income Population* – The US Department of Health and Human Services sets poverty income guidelines. Low-income populations are identified as either a group of low-income individuals living close to one another or a set of individuals who share common conditions of environmental exposure or effect.

This EJ analysis evaluates the racial and income characteristics of persons within the study area. The evaluation consists of the following two steps to determine whether each study area block group meets the “EJ threshold” for further analysis:

- *Step 1: Calculate minority or low-income populations*
  - The 2000 US Census provided data for each block group in the study area and for Montgomery and Frederick counties including: (1) the total population, (2) the total minority population, and (3) the total low-income population. These raw numbers helped to determine the percentage of persons in each minority group and persons below the poverty level.
- *Step 2: Determine if EJ threshold is met* – The baseline minority and low-income populations helped to identify specific block groups that meet the EJ threshold. Block groups would meet the EJ threshold if:

- the minority or low-income population in the block group equals or exceeds 50 percent of the population in that block group, or
- the percentage of the minority or low-income population is at least 10 percent higher than the minority or low-income population percentage for Montgomery County or Frederick County.

The following section presents the initial results of the EJ analysis.

EJ Populations

Montgomery County contains 46.8 percent minority population. This means that block groups in the Montgomery County portion of the study area that meet the EJ threshold are either 50 percent minority or at least 56.8 percent minority. In this instance, any Montgomery County block group that is 50 percent minority or greater would be considered a block group that meets or exceeds the EJ threshold for minority populations. Frederick County contains 13.1 percent minority population. This means that block groups in the Frederick County portion of the study area that meet the EJ threshold are either 50 percent minority or at least 23.1 percent minority. **Table IV-13** lists the study area block groups that meet or exceed the EJ thresholds for minority populations.

Table IV-14: Study Area Block Groups that Met EJ Threshold for Low-Income Populations

CENSUS TRACT	BLOCK GROUP	POPULATION	LOW-INCOME	PERCENT LOW-INCOME
Montgomery County		873,341	47,024	5.4%
7007.14	3	2,000	316	15.8%
Frederick County		195,277	8,550	4.4%
7501	1	1146	379	33.1%
7503	1	1033	223	21.6%
7505.01	2	865	153	17.7%
7505.01	3	423	124	29.3%
7507	3	2043	322	15.8%

Source: 2000 US Census  
Note: Table presents only those block groups that meet or exceed the minority EJ threshold population (50+ minority percentage or equal to/greater than the county minority percentage plus 10 percent, representing “meaningfully greater”) for each respective county.





Montgomery County contains 5.4 percent low-income population. This means that block groups meeting the EJ threshold are either 50 percent low-income or at least 15.4 percent low-income. Frederick County contains 4.4 percent low-income population. This means that block groups meeting the EJ threshold are either 50 percent low-income or at least 14.4 percent low-income. **Table IV-14** lists the study area block groups that meet or exceed the EJ thresholds for low-income populations.

Of the 109 blocks within the study area, only 61 block groups are located within the 1,000-foot impact analysis buffer area for the highway and transitway alignments. Of the 61 block groups, **Table IV-15** lists the 21 block groups that meet or exceed the EJ thresholds for minority populations. Only one block group located within the impact analysis area met the EJ threshold for low-income populations. This block group, 7507.03, met the first and second low-income threshold calculation with 15.8 percent of its population being low-income. Block groups within the impact analysis area meeting the EJ thresholds are also shown in **Figure IV-7**.

These EJ areas are comprised of residential developments, neighborhoods, and communities. The block groups that met the minority EJ threshold are located adjacent to the corridor between I-370 and MD 124 in Montgomery County and north of MD 80 in Frederick County. Although targeted EJ outreach activities were not completed for the purposes of this analysis, residential developments, neighborhoods and communities that are located within the block groups that meet or exceed the EJ thresholds, and that would be directly impacted, are identified as potential EJ areas. The potential impacts on these EJ areas are discussed by impact category in the following section.

Method for Assessing EJ Impacts

Executive Order 12898 requires federal agencies to identify and address, “disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.” To comply with the order, the project team considered the location and severity of potential effects on minority

Table IV-15: Block Groups within Impact Analysis Area that Met EJ Thresholds for Minority and/or Low-Income Populations

MONTGOMERY COUNTY	
Census Tract	Block Group
7007.05	2
7007.05	3
7007.05	4
7008.16	1
7008.16	2
7007.14	1
7008.05	1
7008.05	2
7007.12	1
7007.06	1
7007.06	2
7008.08	1
7008.18	1
FREDERICK COUNTY	
Census Tract	Block Group
7510	4
7510	5
7504	3
7505.02	4
7505.01	7
7507	3
7507	4*
7508	6

\*Also met EJ threshold for low-income populations

and low-income populations within the study area and determined whether the effects were disproportionately high in relation to other areas in the corridor.

The assessment of disproportionate effects was based on a comparison between affected and non-affected (or less-affected) areas, and determined whether impacts fall predominantly or more severely on minority and low-income communities. The EJ analysis is intended to identify any adverse effects that disproportionately occur to minority and/or low-income populations as well as any situations in which proposed mitigation may be inadequate to fully address the adverse effects to minority and/or low-income communities.

EJ Impacts and Mitigation

Alternative 1: No-Build Alternative

The No-Build Alternative includes only general highway maintenance, and operational and signage improvements. The No-Build Alternative is not consistent with adopted land use plans and current development patterns which have already occurred in response to the potential highway and transit improvements within the corridor. The No-Build Alternative would have an adverse impact on future traffic conditions and transportation access throughout the corridor. The No-Build Alternative would not address the congestion and safety hazards along I-270 and US 15, particularly at the existing interchanges, that are expected to occur with the growth anticipated in the corridor by the year 2030. Other than the above, the No-Build Alternative is not expected to have direct impacts on EJ areas.

Alternatives 6A/B and 7A/B

Alternatives 6A/B and 7A/B were analyzed for potential impacts in the following categories on EJ populations within 1,000 feet of the highway and transitway alignments:

- Displacements and relocations
- Community cohesion and access
- Economic activity
- Visual conditions
- Noise and vibration
- Traffic and transportation

Effects on Displacements and Relocation in EJ Areas

The EJ areas were assessed for potential property acquisition and/or displacements of residential and commercial buildings. The analysis used preliminary right-of-way estimates, which was the same method used to analyze the build alternatives in the 2002 DEIS. The engineering *plan sheets* in **Appendix A** of this document identifies the locations of potential displacements. If a build alternative is selected as the preferred transportation improvement, the number of actual displacements may vary from those presented as a result of refinements in both the design and right-of-way requirements and the use of retaining walls.

Highway Alignment

The highway alignment would potentially displace residences (single-family homes, townhouses, condominiums and apartment units) and businesses in EJ areas. The 2002 DEIS noted the following potential displacements in EJ areas: 119 residences under Alternatives 3A/B and 4A/B; 120 residences under Alternatives 5A/B; and 224 residences under Alternative 5C. Over 90 percent of these displacements would have occurred within three EJ areas currently located on both sides of I-270 in Gaithersburg: Brighton West, Fireside, and London Derry/Montgomery Club. As these alternatives may move forward, further design refinements, including the use of retaining walls along portions of the highway alignment, could largely reduce the overall number of highway displacements in these areas.

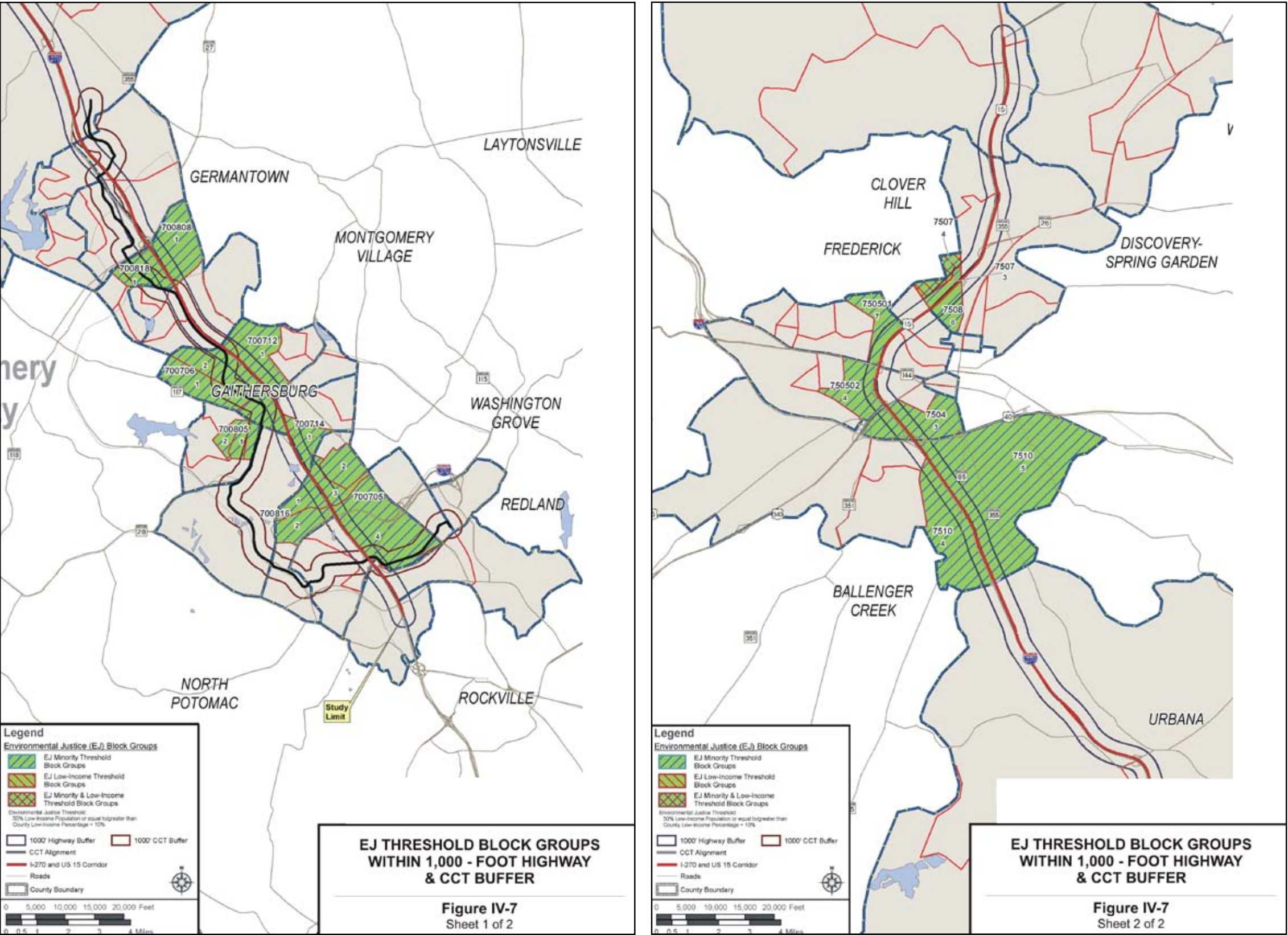
In comparison, Alternatives 6A/B and 7A/B could displace up to a total of 244 residences in EJ areas. Potential displacements could be reduced by using additional retaining walls and/or reducing shoulder widths in the following EJ areas:

Montgomery County

- Census Tract 7008.16 – Block Group 1, Brighton West, I-270 southbound, north of I-370 (**Sheet HWY 1, Appendix A**). The highway widening would displace (81) townhouse units within this EJ area. Use of a 2,300-foot retaining wall and reduced shoulder widths could reduce displacements to approximately 10 residential units.



Figure IV-7: EJ Threshold Block Groups within 1,000-foot Highway & CCT Buffer





- Census Tract 7007.14 – Block Group 1, London Derry/Montgomery Club, I-270 northbound, south of MD 117 (**Sheet HWY 2, Appendix A**). The widening of I-270 and potential direct access ramps to MD 117 would displace up to 150 apartments within this EJ area. Construction of a 1,700-foot retaining wall could lower the number of displacements to 61 units. The project could preserve all residential units if it eliminated the ramps at MD 117 and reduced the shoulder widths along I-270.
- Census Tract 7007.06 – Block Group 2, Caulfield (**Sheet HWY 2, Appendix A**). The highway widening would displace one residence, located off of Game Preserve Road near I-270 southbound, but could preserve it by constructing a retaining wall. However, the transitway alignment would displace this residence under all scenarios.

#### Frederick County

- Census Tract 7510 – Block Group 4, Princeton Court Apartments, I-270 southbound, south of the I-70 interchange along Fox Croft Drive (**Sheet HWY 11, Appendix A**). The widening of I-270, the construction of an auxiliary lane connecting I-70 and MD 85, and the acceleration ramp lane from I-70 would displace up to 12 apartment units within one building in this EJ area. Construction of a 500-foot long (minimum length) retaining wall could preserve these apartment units. The design and cost of this retaining wall will be investigated in later stages of the project. An additional business would be displaced in the Harding Farm community, I-270 southbound, south of Shockley Drive.

Although the overall number of potential displacements has been reduced since the 2002 DEIS, the displaced residences would still be concentrated in two EJ areas (Brighton West and London Derry/Montgomery Club) located on either side of I-270 between I-370 and MD 117 in Montgomery County. The number of potential property displacements in minority and low-income communities compared to the number of potential property displacements in non-EJ areas along the corridor suggests a disproportionately high or adverse impact because many minority communities border I-270 on both sides.

The design refinements and retaining walls for the highway alignment are potential mitigation measures. The *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970* (Uniform Act) provides assistance for people affected by federally funded projects. People whose real property is acquired, or who move as a result of projects receiving federal funds, will be treated fairly and equitably and will receive assistance in moving from the property they occupy.

#### Transitway Alignment

The transitway alignment is generally located on vacant and undeveloped land that Montgomery County has reserved for the transitway alignment in its Master Plan. The reserved Master Plan alignment minimizes the potential number of displacements. However, the transitway alignment would displace one residence located in the Caulfield community off of Game Preserve Road (**Sheet TRAN 4, Appendix A**). A potential O&M site in this same census tract would displace up to four additional residences in this area. The final location of an O&M facility for the transitway has not yet been identified, and this site may not be chosen.

#### Effects on Community Cohesion and Access in EJ Areas

Community cohesion refers to stability, interdependence and social interaction among persons or groups in a community. In some instances, the construction of a transportation facility could have an effect on community cohesion by increasing the amount of physical separation (barriers) between parts of an established community or by creating physical or psychological isolation of residents from one another. As noted previously, the widening along I-270 under Alternatives 6A/B and 7A/B would displace residences in the Brighton West, Fireside, London Derry/Montgomery Club, and Caulfield communities, which are located in EJ areas in Montgomery County, and the Princeton Court Apartments located near the Foxcroft II subdivision that is located in Frederick County.

The proposed highway alternatives, without additional mitigation measures, would displace a large number of residences along I-270 and remove some open space, especially for those residences that border the roadway.

The highway improvements are proposed along the edges of the affected communities and, therefore, would not split any communities or separate residents from reasonable access to any community facilities and services. Although existing I-270 and US 15 are physical barriers to vehicle and pedestrian movements between communities located on either side of the highways, relationships still could occur among neighbors living on the same side of the highway. By displacing residences in EJ areas on both sides of I-270, Alternatives 6A/B and 7A/B could remove some residents from other residents located on the same side of I-270 and possibly disrupt social interactions and community cohesion. Further coordination with potentially affected residents would identify the extent of effects to social interactions and community cohesion.

Homes generally border I-270 along their backyards. For the most part, this condition will continue. However, in some locations, the highway alternatives will remove the existing residences closest to I-270 and expose the newly widened highway to other residences that were previously shielded by the displaced residences. Alternatives 6A/B and 7A/B would not change existing access by motor vehicles, bicycles, and walking, into or within neighborhoods and to community facilities or services. In general, Alternatives 6A/B and 7A/B would ease travel for residents by providing open access areas and direct access ramps for interchanges. The proposed interchanges would enhance access to and from residential and business developments along and beyond the corridor, all of which are within easy vehicle access of the highway.

The transitway would improve access to and from the King Farm, Orchard Pond and Caulfield communities and other destinations by increasing travel options. The transitway would offer three stations in EJ areas (East Gaither, West Gaither, and Metropolitan Grove stations) that would increase access to employment areas for EJ populations.

#### Effects on Economic Activity in EJ Areas

The I-270/US 15 project would support economic development and improve access throughout the corridor while remaining as community-friendly as possible. Workers would benefit from reduced travel times and improved connections since they can access a wider geographic area for jobs in the same amount of travel time. The project would benefit even those users who cannot or choose not to pay toll charges. Alternatives 6A/B and 7A/B would keep existing general purpose travel lanes and the transitway alignment would provide improved public transit access in the corridor. This improved access will encourage greater economic development and evenly distribute benefits to surrounding communities.

The project analyzed potential economic effects on a broader (regional) geographic scale rather than on a site-specific level. The highway alignment is expected to support economic development by improving accessibility to employment areas. Alternative 7A/B tends to increase accessibility and economic development potential better than Alternative 6A/B although the differences are slight.

If Alternative 6A/B or 7A/B is selected as the preferred transportation improvement, later phases of the project should consider, in greater detail, the following items related to EJ populations:

- The potential for increased housing costs in historically minority/low-income neighborhoods in or near the City of Frederick as a result of improved access with the highway improvements.
- The extent that low-income people use and benefit from the ETL Alternatives. If general purpose lanes become congested due to more travelers choosing not to pay the toll, this might burden low-income populations with longer commutes or not allow them to enjoy the full benefits of the added roadway capacity (considering that low-income people might be less capable/willing to pay the ETL tolls).

The transitway alignment is expected to support economic development by improving access to employment areas. This increased access through transit will be especially beneficial for those persons who do not drive or own a car. The neighborhoods and communities near the proposed transit stations are





King Farm Reserved Transitway

expected to benefit from increased access to jobs and other destinations. They include King Farm, Orchard Pond, Caulfield, Middlebrook, and The Colony condominiums.

In general, proximity to rail is shown to benefit property values due to the increased transit access. This conclusion was based on several measures of property value such as sales prices of single-family homes, apartment rents, and median home value. The benefits of increased property values occur within a reasonable walking distance from the station, generally one-quarter mile to one-half mile. Beyond this distance, the effect of nearby rail transit on property values was negligible *Impacts of Rail Transit on Property Values*, located on the web at <http://www.apta.com/research/info/briefings/documents/diaz.pdf>

If the transitway alternative is selected as the preferred transportation improvement, later phases of the project should consider, in greater detail, the potential for property values to increase near stations along the transitway alignment. This could be an advantage for property owners in EJ areas who are willing to move but a potentially large issue if there are any low-income renters in the vicinity of the stations or owners who want to stay and cannot afford the higher property taxes.

Effects on Visual Conditions in EJ Areas

Alternatives 6A/B and 7A/B would increase the visual presence of the highway with additional lane(s), retaining walls (recommended for minimizing potential displacements), and noise barriers (for noise reduction). Alternatives 6A/B and 7A/B are expected to have similar visual effects although Alternative 7A/B consists of two additional lanes between MD 121 and north of MD 80

in Frederick County, rather than the one additional lane under Alternative 6 A/B.

Residents are likely accustomed to the traffic and view of existing I-270. Alternatives 6A/B and 7A/B would add new visual elements in the form of retaining walls and noise barriers. The new retaining walls and noise barriers will vary in length and height, and the effects would be site-specific. The retaining walls and noise barriers would be visible from the vehicles traveling along the highway. However, the EJ areas on either side of I-270, between I-370 and Muddy Branch Road, generally have two- and three-story townhouse, apartment and condominium properties with some wooded areas along the highway. The wooded areas would partially screen the view of the new retaining walls and noise barriers from residences. After mitigation, minor visual effects are expected on residential land uses in EJ areas.

The transitway alignment will have moderate visual effects since it would travel mostly at ground level. The potential transit station sites would have the greatest degree of visual effect on EJ areas. These station sites will use land within several new and emerging communities. The East and West Gaither Stations and the Metropolitan Grove Station would add new visual elements and public activity centers within EJ areas.

Two of the six potential O&M facility sites, the PEPCO and Police Impound Lot sites, are located in EJ areas near Metropolitan Grove. Potential O&M sites are also located in the Caulfield community. These sites are generally surrounded by wooded areas, which lessen the potential for visual intrusion on surrounding areas.

Using appropriate mitigation techniques, minimal visual effects on all areas, including EJ areas, are expected to occur from the transitway facilities as these would be designed to be as visually compatible with the surrounding areas, as possible.

Effects of Noise and Vibration in EJ Areas

Highway Alignment

Several residential properties within EJ areas are located near I-270 and US 15 and are predicted to experience increased noise levels as a result of the proposed highway improvements included in Alternatives 6A/B and 7A/B.

The following EJ areas are anticipated to require noise abatement:

Montgomery County

- Census Tract 7007.14 – Block Group 1, London Derry and Stratford Mews, I-270 northbound, south of MD 117 (**Sheet HWY 2, Appendix A**). Two noise receptors (H-4 and H-5) located adjacent to these areas indicate a noise impact. The area meets SHA’s criteria for a noise barrier that would provide lower noise levels at 51 residences.

Frederick County

- Census Tract 7510 – Block Group 4, Princeton Court Apartments, I-270 southbound, south of the I-70 interchange along Fox Croft Drive (**Sheet HWY 11, Appendix A**). Two noise receptors (H-31 and H-32) located adjacent to these communities indicate a noise impact. The area meets SHA’s criteria for a noise barrier that would provide lower noise levels at 37 residences.
- Census Tract 7505.02–Block Group 4, Linden Hills, US 15 southbound, south of US 40 (**Sheet HWY 12, Appendix A**). One receptor (H-36) located adjacent to this area indicates a noise impact. The area meets SHA’s criteria for a noise barrier that would provide lower noise levels at 13 residences.
- Census Tract 7505.01 – Block Group 7, Waterford and Rock Creek Estates, US 15 southbound, south of Rosemont Avenue (**Sheet HWY 13, Appendix A**). One receptor (H-38A) located adjacent to this area indicates a noise impact. The area meets SHA’s criteria for a noise barrier that would provide lower noise levels at 47 residences.
- Census Tract 7507 – Block Groups 3 and 4, Applegate, US 15 southbound, south of Opposumtown Pike (**Sheet HWY 13, Appendix A**). One receptor (H-44) located adjacent to this area indicates a noise impact. The area meets SHA’s criteria for a noise barrier that would provide lower noise levels at 29 residences.
- Census Tract 7508 – Block Group 6, Spring Valley, US 15 northbound, south of Motter Avenue (**Sheet HWY 13, Appendix A**). One receptor (H-45) located adjacent to this area indicates a noise impact.

The area meets SHA’s criteria for a noise barrier that would provide lower noise levels at 31 residences.

Transitway Alignment

The transitway alignment travels along the border of The Colony condominiums, an EJ area, located in Census Tract 7008.18 - Block Group 1 (**Sheet TRAN 5, Appendix A**). A noise receptor (T-20) located adjacent to this area indicates the need for a noise barrier to lower the projected noise levels to within acceptable levels. A proposed noise barrier, 1,700 feet long and 3½ feet high, would protect 24 residences.

Potential Mitigation Measures

Potential noise effects from the project would occur throughout the corridor. However, noise barriers could reduce adverse noise effects from the project. Noise abatement measures will be provided where feasible and reasonable. After mitigation, no further noise impacts are anticipated on EJ areas from the highway or transitway alignments or associated facilities. Therefore, the extent of the projected impacts to the EJ areas identified would not be considered a “disproportionately high and adverse impact” under the EJ guidelines.

Effects on Traffic and Transportation in EJ Areas

All residents in the corridor, including those who live in EJ areas, can expect to benefit from the project through improved transportation access and a modest reduction in traffic on local roads with the provision of more public transportation to the area.

Highway Alignment

Alternatives 6A/B and 7A/B include improvements to existing interchanges, construction of new interchanges, and construction of access roads in several locations that will improve traffic, transportation access, and safety. The access improvements would benefit all travelers within the corridor including those who live and work in EJ areas. Of the total 10 interchange improvement locations, the following four are located in EJ areas: the I-270/ Middlebrook Road and I-270/MD 118 interchanges in Montgomery County and the I-270/MD 85 and US 15/Jefferson Street/US 340 interchanges in Frederick County. No new interchanges would be located in EJ areas.



Effects from construction activities will be temporary. During various stages of construction, the hauling of construction debris, excavation, and building materials will generate additional traffic. Construction will be restricted to the designated station sites, construction staging areas, and alignment sections.

### Transitway Alignment

Residents and employees in the corridor can expect transportation benefits from the project. With the transitway, area residents will have improved access throughout the corridor and the surrounding area can expect a modest reduction in traffic on local roads with the provision of more public transportation to the area.

### Mitigation Measures

Standard traffic control devices would manage vehicle movements at intersections and near transitway stations. Gates or flashing signals and audio signals, such as horns, would be considered. A temporary fence will be used to shield construction activities and equipment from residences and limit pedestrian and vehicular movements to prevent accidents.

Appropriate signage will be used to notify travelers of road closures and detours. Road access would be restored as soon as possible, following completion of work in an area. Emergency vehicle access will be maintained at all times.

Maintenance of traffic and construction staging will be planned, coordinated with local jurisdictions, and scheduled to minimize traffic delays and interruptions to the maximum extent possible. Maintenance of traffic plans for I-270, US 15, and adjacent state and local roads will be developed during the final design phase and refined prior to construction. After mitigation, minor traffic or transportation effects on adjacent communities, including the EJ areas, are expected from the highway or transitway alignments or associated facilities.

### Conclusion

The potential effects to land use, community facilities and services, air, noise, public health and safety, visual effects, and traffic and transportation with regard to EJ areas are comparable to other locations throughout the corridor. The extent of the proposed impacts for these resource topics would not be considered a “disproportionately high and adverse impact” under the EJ guidelines.

However, the number of property displacements and potential adverse effects to community cohesion in EJ areas before minimization options are included, when compared to non-EJ areas along the corridor, suggests a disproportionately high or adverse impact as a result of the proposed transportation improvements.

Alternatives 6A/B and 7A/B follow existing I-270 and include relatively equal widening on both sides of the roadway for the entire length of the project. The highway design is similar in other areas along the corridor but results in more adverse effects between I-370 and MD 117 (in Brighton West, Fireside and London Derry/Montgomery Club developments and/or communities) due to the physical nearness and density of the residences to the highway. The widening of I-270 in this area would have unavoidable adverse effects to EJ areas on both sides of the roadway. Given that the corridor widening is relatively equal on both sides of the existing roadway, the potential impacts to adjacent EJ areas will be generally distributed equally on both sides, with no intent to have greater impacts to one side of the roadway and avoid impacts to the other side. The larger number of potential displacements in these EJ areas (compared to other areas along the corridor) partially reflects the uncertainty of the design of the retaining walls at this stage in the project development process. Additional investigation of retaining walls may further reduce the number of potential displacements in these EJ areas.

Actual EJ populations have not been identified at this time. The analysis identified those census block groups where the minority or low-income populations meet the EJ threshold and where EJ populations might be impacted.

The identification of a disproportionately high and adverse effect on EJ populations does not preclude a project from moving forward. FHWA’s *Actions to Address Environmental Justice in Minority Populations and Low-income Populations* (December 2, 1998) indicates that a disproportionately high and adverse effect may be carried out under the following conditions:

- Programs, policies, and activities that will have disproportionately high and adverse effects on minority populations or low-income populations will be carried out only if further mitigation measures or alternatives that would avoid or reduce the

disproportionately high and adverse effects are not practicable. In determining whether a mitigation measure or an alternative is “practicable,” the social, economic (including costs) and environmental effects of avoiding or mitigating the adverse effects will be taken into account.

- Respective programs, policies or activities that have the potential for disproportionately high and adverse effects on populations protected by Title VI (“protected populations”) will be carried out only if:
  - (1) A substantial need for the program, policy or activity exists, based on the overall public interest; and
  - (2) Alternatives that would have less adverse effects on protected populations have either:
    - (a) adverse social, economic, environmental, or human health impacts that are more severe; or
    - (b) would involve increased costs of an extraordinary magnitude.

### Public Involvement

The project team contacted public and private social service agencies, community action and religious organizations, schools and libraries to request additional information to supplement census data on the locations of EJ populations. The project team assumed that these organizations offer existing, targeted, local community outreach programs and possess knowledge of specific locations of EJ populations.

The project team identified community locations on a base map with census tracts that showed higher than county averages for minority and low-income populations. The project team sent correspondence requesting assistance in identifying locations of EJ populations to those entities located within census tracts that exhibited higher than county averages for minority and low-income populations. In addition, religious organizations and schools located within census tracts that exhibited higher than countywide averages for minority and low-income populations received correspondence and a newsletter explaining the project and offering them the opportunity to meet and discuss the I-270/US 15 project with the project team.

Public involvement has been integrated throughout this project planning study. The purposes of the public involvement process are to reach out to all populations that would be directly and indirectly affected by the project, including minority and low income populations, to provide information and to generate input on the project. Advertisements for all of the public information meetings held for this project were advertised in:

- *The Baltimore Sun*
- *The Washington Post*
- *The Montgomery Gazette*
- *The Montgomery Journal*
- *The Afro-American (Washington, DC)*
- *El Montgomery*
- *The Asian Fortune*
- *The Washington Jewish Weekly*
- *The Frederick News Post*
- *The Frederick Gazette*

Notices were also distributed to a mailing list that included all property owners and residents within and slightly beyond the study area. This includes churches, elected officials, community associations, and businesses.

Additional outreach since the 2002 DEIS included meetings with the homeowners/civic associations of the Fox Chapel community (August 25, 2003), the Brighton West community (April 20, 2006) and attending the Asian Spring New Year Celebration (February 17, 2007) and the Annual Latino Festival de Frederick (September 28, 2008) both located in Frederick County. Chapter VII in this document summarizes the outreach meetings. The project mailing list has also been expanded to encompass a wider area and includes all census block groups identified for the study area. The list includes a 1½-mile corridor surrounding the transitway alignment and continues east of I-270 to include addresses on both sides of MD 355.

If a build alternative is selected as the preferred for transportation improvements, SHA will coordinate with the affected communities to develop a mitigation program tailored, to the extent practical, to meet the needs of EJ areas prior to final project approval. SHA will reassess the preliminary conclusions of this analysis based on input from the public involvement program. The project team will continue to involve minority and low-income populations in the project planning process during later stages of the project.





## C. Economic Environment

Transportation and the economy are closely linked. Citizens and stakeholders make choices regarding where they work, live, or conduct business based on the ability to access those locations. Therefore, an important relationship exists between the level of economic productivity and the quality of transportation services and facilities in a given region. This section discusses how the proposed improvements included in the I-270/US 15 Multi-Modal Corridor study would impact that relationship.

### Current Economic Profile of the Project Area

The I-270/US 15 Corridor is one of the premier economic regions in Maryland. Frederick and Montgomery Counties account for 21.8 percent of all jobs in Maryland [(US Bureau of Labor Statistics (BLS), 2004)]. Many of those jobs are located directly along the I-270/US 15 and CCT alignments, with the highest concentrations in central Montgomery County.

Workers in the corridor are also well-paid compared with the rest of the state. Although they account for 21.8 percent of jobs in Maryland, workers in Montgomery and Frederick counties actually take home over a quarter (25.4 percent) of the state’s total wages. Median annual household income figures reinforce this finding. According to the US Census Bureau, the 2006 median annual household income for Maryland was \$65,144, compared to the median annual household income in Frederick County of \$74,029 and in Montgomery County of \$87,624.

#### Montgomery County

The Montgomery County economy is led by three industries: professional and business services; education and health services; and trade, transportation and utility-related industries. These three industries make up over half of the county’s total employment. Within that employment base, the best paying industries are professional and business services, and education and health services whose employees earn over 40 percent of the county’s total payroll (BLS).

Montgomery County’s portion of the I-270/US 15 corridor has become the favored location for many high-tech businesses, especially biotechnology and information technology firms. Montgomery County leads the state in the number of high-tech firms. Over one-fifth of all the state’s high-tech businesses, 2,530 establishments, were located in Montgomery County in 2002. Within Montgomery County, the Rockville-Gaithersburg-Germantown portion of the I-270/US 15 Corridor has the highest concentration of high-tech employers.

In the recent past, Montgomery County has seen some very minor decreases in employment, losing 1,198 jobs countywide from 2001 to 2004 (a minus 0.1 percent change). Nonetheless, some sectors continued to see employment increases in the county with education and health services and the construction industry leading the way in hiring.

#### Frederick County

The Frederick County economy is led by four key industries: education and health services; trade, transportation and utilities; professional and business services; and construction. Together, these four industries account for well over half of the county’s employees and 63.8 percent of the county’s earnings (BLS).

Seeking to capitalize on the boom in high-tech companies locating in the corridor, Frederick County’s Office of Economic Development is developing the Mount St. Mary’s Bio Park and creating the Jefferson Tech Park, an advanced technology park in the southern portion of the county. There are already several major bio-tech employers in Frederick County, including the US Army Medical Research Institute of Infectious Diseases at Fort Detrick.

Unlike Montgomery County, employment actually increased by four percent in Frederick County from 2001 to 2004. This growth was much larger than in the state as a whole, where employment grew by only one-half of one percent over the same period. In Frederick County, the professional and business services industries

and the financial activities industries led the way in terms of growth rates.

### Major Employment Centers in the Project Area

The I-270/US 15 Corridor is home to numerous employment centers, many of which are in office park settings, but some of which have denser environments. In general, development remains concentrated primarily toward the southeastern end of the corridor and thins out toward the northwest. Most of the major job centers are located in Montgomery County. Heading northwest along I-270 from the I-495 Capital Beltway, these centers are:

- North Bethesda (68,179 employees in 2005 according to the M-NCPPC)
- Rockville (75,261 employees)
- Gaithersburg (82,965 employees)
- Germantown (24,184 employees)
- Clarksburg (5,293 employees)

In contrast, the only major employment center in Frederick County is the City of Frederick, located at the northwest end of the I-270 corridor. There were 47,266 people employed in the City of Frederick in 2006.

### Economic Impacts

Overall, the build alternatives will create relatively small positive economic development effects when compared with the large amount of economic growth forecasted to occur in the project area, with or without the project. Nonetheless, the congestion relief provided will make a difference with regards to the accessibility of people, goods, and markets, thus helping the area maintain its economic edge. Some project alternatives will also contribute more to promoting economic development than others, although the differences are not expected to be great. **Table IV-16** summarizes the projected economic impact of each of the proposed project alternatives, including how the project impacts accessibility and the economic health of consumers, workers, and local governments.

### Accessibility

A key measure used in **Table IV-16** to summarize project economic impacts is accessibility. Accessibility is a measure that helps us understand how easy it is to get from one location to another. The more work and/or shopping destinations that can be reached easily and quickly from a given location, the higher that location’s accessibility is rated. Many people choose to live in locations with high accessibility because people can reach their work or shopping destinations easily from these places. For example, a home in downtown Washington DC has very high accessibility, whereas a home on the edge of the urban area typically has much lower accessibility. As a result, housing densities and rents are much higher in downtown because many people wish to live there to take advantage of the close-in location.

Three types of accessibility measures are used in this study:

- commuter personal accessibility/business labor market accessibility
- consumer personal accessibility
- retail business accessibility

Commuter personal accessibility (or, from a business’ perspective, business labor market accessibility) measures how easy it is for residents to get to employment destinations: the more jobs that can be reached faster from a given point, the higher the commuter accessibility measure for that place. Consumer personal accessibility measures how easy it is for residents to access shopping destinations: the more shopping destinations nearby, the higher the consumer accessibility figure for a given place. Finally, retail business accessibility takes a business perspective and measures how easy it is for potential customers to access a given business location: the more people with higher disposable incomes nearby that can reach a destination quickly, the higher that place’s score.





Impacts to Consumers

As **Table IV-16** shows, both Montgomery and Frederick county residents along the I-270/US 15 corridor will have better access to shopping destinations with the project. Frederick County consumers will benefit the most since they will be able to access the large number of retail centers in Montgomery County more easily with the addition of ETLs. Alternative 7A/B, with its greater roadway capacity near Frederick, will increase consumer accessibility to a greater degree than Alternative 6A/B, especially for Frederick County residents.

Impacts to Businesses

Retail businesses in both counties could potentially benefit from the broader customer base who can reach their stores in a shorter amount of time. **Table IV-16** shows that Frederick County businesses might benefit the most from the project. This is because the ETLs would put Frederick County businesses along the corridor within easier reach of the large population centers in Montgomery County; where many residents also have higher disposable incomes than residents in Frederick County. Although Montgomery County businesses also stand to benefit from the project, their retail business accessibility scores are lower because they are only gaining better access to the smaller and comparatively less wealthy population center of Frederick.

Impacts to Workers

There are two major economic impacts of the project from a worker’s perspective: (1) short-term employment impacts related to construction and (2) changes in commuter accessibility. As **Table IV-16** indicates, both ETL highway options are expected to provide about the same number of construction jobs. However, building the light rail is expected to require hiring about 400 more workers than would be required to develop the bus rapid transit line. The short-term economic impacts to the region will tend to be magnified with the light rail alternative as those extra employees spend the money they earn and it filters throughout the economy.

In the long term, Frederick County commuters will benefit the most with the addition of ETLs due to the

increased accessibility of the many major employment centers in Montgomery County. Curiously, the model indicated that Alternative 6A/B would provide slightly better benefits to Frederick County commuters than Alternative 7A/B. This figure is within the error margins of the model, which could explain this counterintuitive finding.

Impacts to Local Governments

Local government property tax revenues could be influenced in three ways by the project: (1) through direct takings of property off the tax rolls to construct the improvements, (2) the stimulation of new development which would increase property tax revenues, and (3) general property value increases associated with the accessibility improvements. As **Table IV-16** shows, property tax losses from the taking of land to construct the project are expected to be near zero. This is because most of the tax revenue lost with the displacements will be regained once the residents and businesses relocate to new sites, likely within the same taxing jurisdiction.

Both highway options are expected to increase the value of, and development potential for, open lands along the corridor, especially in northern Montgomery County and central and southern Frederick County. This new development can be expected to give a modest boost in tax revenue to the two counties. Existing homes and businesses near the corridor, especially in Frederick County, may also see their values rise because of the accessibility benefits the project offers.

The transit options also have the potential to increase transit oriented development opportunities. Transit oriented development potential is typically seen as being greater with light rail than with bus rapid transit. This is because the greater, perceptually more permanent, investment in infrastructure with a rail line is thought to make developers more willing to take the risks associated with doing high-density mixed-use developments. Thus, the potential for increased tax revenues from new high-density, mixed-use developments may be greater with light rail than with bus rapid transit.

Table IV-16: Comparison of the Build Alternatives and Their Relative Impacts for the Different Economic Impact Categories

MEASURE	UNITS	ALT. 6A	ALT. 6B	ALT. 7A	ALT. 7B
CONSUMER IMPACTS					
Consumer Personal Accessibility: Montgomery County	% Change in Personal Accessibility (not available by transit alternative)	+ 0.4%	+ 0.4%	+ 0.5%	+ 0.5%
Consumer Personal Accessibility: Frederick County		+ 2.0%	+ 2.0%	+ 3.5%	+ 3.5%
Consumer Personal Accessibility: Entire Region		0.0%	0.0%	0.0%	0.0%
BUSINESS IMPACTS					
Retail Business Accessibility: Montgomery County	% Change in Retail Business Accessibility (not available by transit alternative)	+ 0.7%	+ 0.7%	+ 0.7%	+ 0.7%
Retail Business Accessibility: Frederick County		+ 1.4%	+ 1.4%	+ 2.3%	+ 2.3%
Retail Business Accessibility: Entire Region		+ 0.1%	+ 0.1%	+ 0.0%	+ 0.0%
Business Disruption Caused by Construction	Qualitative	--	--	--	--
Supply Chain Productivity	Qualitative	+	+	++	++
WORKER IMPACTS					
Commuter Personal Accessibility: Montgomery County	% Change in Commuter Personal Accessibility (not available by transit alternative)	- 0.2%	- 0.2%	0.0%	0.0%
Commuter Personal Accessibility: Frederick County		+ 5.2%	+ 5.2%	+ 4.4%	+ 4.4%
Commuter Personal Accessibility: Entire Region		0.0%	0.0%	0.0%	0.0%
Supported Employment (Annualized: Direct + Indirect)	Person-Years of New Employment	8,274	7,791	8,274	7,791
New Employment (Annualized: Direct + Indirect)		3,804	3,399	3,804	3,399
LOCAL GOVERNMENT FISCAL IMPACTS					
Property Tax Revenues: Property Takings (Net)	Qualitative	no change	no change	no change	no change
Property Tax Revenues: New Development	Qualitative	++	+	++	+
Property Tax Revenues: Property Values	Qualitative	++	+	++	+

++ Positive      + Slightly Positive      no change Negligible Change      - Slightly Negative      -- Negative





## D. Cultural Resources

This section explains the regulatory framework for identifying effects to significant cultural resources located within the project’s Area of Potential Effect (APE). The APE is defined as the area within which the impacts of the alternatives (property acquisition, noise, visual, and other) would affect each identified cultural resource. Following the regulatory framework and methodology, existing historic properties within the APE are listed and the effects (adverse effect, no adverse effect, or no effect) are identified. The section closes with a summary of consultation that has occurred to date and a discussion of archeological resources.

### Regulatory Framework and Methodology

Historic properties are defined as prehistoric or historic districts, sites, buildings, and structures significant in American history and listed in, or eligible for, the National Register of Historic Places (NRHP). The National Historic Preservation Act (NHPA) of 1966, as amended, the National Environmental Policy Act (NEPA) of 1969, and other applicable federal, state, and local legislation govern the identification, analysis, and treatment of historic resources. The lead federal agencies, FHWA and FTA, are required to take into account the effect of their proposed project on historic properties. The NRHP was established at the Federal level by NHPA to record resources significant in our understanding of American history and culture. For purposes of this discussion, archeological resources (sites) refer to cemeteries, prehistoric, historic, and underwater archeological sites, while historic resources refer to buildings, structures, or districts.

All historic and archeological resources identified during cultural resource studies for the I-270/US 15 Corridor were evaluated and coordinated with the Maryland State Historic Preservation Officer (MD SHPO), for their opinion on NRHP eligibility. These properties were evaluated using the criteria of the NRHP, as described in the 2002 DEIS. This document presents newly identified historic resources since the 2002 DEIS and evaluates the potential for Alternatives 6A/B and 7A/B to have an adverse effect on all of

the historic properties. Historic and archeological resource identification and evaluation studies have been completed through coordination with the MD SHPO. A list of correspondence documenting this coordination is included in **Appendix D**.

The effects of the project were assessed in accordance with Section 106 of the NHPA and the implementing regulations of the Advisory Council on Historic Preservation (ACHP) (36 CFR §800.5). The regulations provide that a project will have an effect on a resource when the “undertaking may alter characteristics of a historic property that qualify the property for inclusion in the National Register in a manner that would diminish the integrity of the property. For the purpose of determining effect, alteration to features of property’s location, setting, or use may be relevant depending on a property’s significant characteristics and should be considered” (36 CFR §800.5(a)(1)). In addition, 36 CFR §800.10(a) provides “... that the agency official, to the maximum extent possible, undertake such planning and actions as may be necessary to minimize harm to any National Historical Landmark that may be directly and adversely affected by the undertaking.”

The focus of the assessment done for the project was to determine whether the undertaking has an effect, and subsequently, if that effect is adverse. Using the Criteria of Adverse Effect, 36 CFR §800.5(a)(1), and the Definition of Effect specified in 36 CFR §800.16(i) and 36 CFR §800.4(d)(1), three basic findings can be made:

- No Effect: there is no effect, either harmful or beneficial, on the historic property.
- No Adverse Effect: there could be an effect, but the effect would not be harmful to those characteristics that qualify the property for inclusion in the NRHP.
- Adverse Effect: there could be an effect, and that effect could diminish the integrity of such characteristics.

Seven conditions are specified in 36 CFR §800.5(a)(2) (i-vii) that are considered adverse effects:

- Physical destruction or damage to all or part of the property;

- Alteration of a property that is not consistent with the Secretary of Interior’s *Standards For The Treatment of Historic Properties* (36 CFR Part 68) and applicable guidelines;
- Removal of the property from its historic location;
- Change of the character of the property’s use or physical features within the property’s setting that contribute to its historic significance;
- Introduction of visual, atmospheric or audible elements that diminish the integrity of the property’s significant historic features;
- Neglect of a property which causes its deterioration, except where such neglect and deterioration are recognized qualities of a property of religious and cultural significance to an Indian tribe or Native Hawaiian organization; and
- Transfer, lease, or sale of property out of Federal ownership or control without adequate and legally enforceable restrictions or conditions to ensure long-term preservation of the property’s historic significance.

Effects that otherwise would be adverse, may be considered to be “not adverse” if one or more of the following conditions are met:

- When the property is of value only for its potential contribution to archeological, historical, or architectural research, and when such value can be substantially preserved through appropriate research, and such research is conducted in accordance with applicable professional standards and guidelines;
- When the undertaking is limited to rehabilitation of buildings and structures in a manner that preserves the historical and architectural values, or
- When the undertaking is limited to the transfer, lease or sale of historic properties and adequate restrictions or conditions are included to ensure preservation of the property’s significant historic features.

### Existing Historic and Archeological Resources

Thirty historic properties that are in, or are eligible for inclusion in, the NRHP were identified during the cultural resources survey and were described in the 2002 DEIS. Of these, seven were determined to be within the APE for Alternatives 3A/B, 4A/B and 5A/B/C, and are also within the APE of Alternatives 6A/B and 7A/B. Three additional properties, previously unevaluated, were identified within the APE of Alternatives 6A/B and 7A/B and have subsequently been determined eligible for inclusion in the NRHP. The locations of all of the historic properties are shown on **Figure IV-8** with their Maryland Inventory of Historic Places (MIHP) numbers. Listed below are the ten historic properties within the APE of Alternatives 6A/B and 7A/B as well as within the APE of Alternatives 3A/B, 4A/B, and 5A/B/C. The ten historic properties are:

- England/Crown Farm (M:20-17),
- Belward Farm (M:20-21),
- Atomic Energy Commission (AEC) Building (M:19-41),
- Monocacy National Battlefield (F-3-42),
- Schifferstadt (F-3-47),
- Rose Hill Manor (F-3-126),
- Harmony Grove Union Chapel (F-3-197),
- Worman House (F-3-198),
- Spring Bank (F-3-22), and
- Birely-Roelkey Farm (F-3-134).

Archeological sites that are listed or eligible for the NRHP are not mapped to protect the confidentiality of these sensitive resources. No additional archeological investigations have been undertaken for the project since the 2002 DEIS.



Figure IV-8: Historic Resources

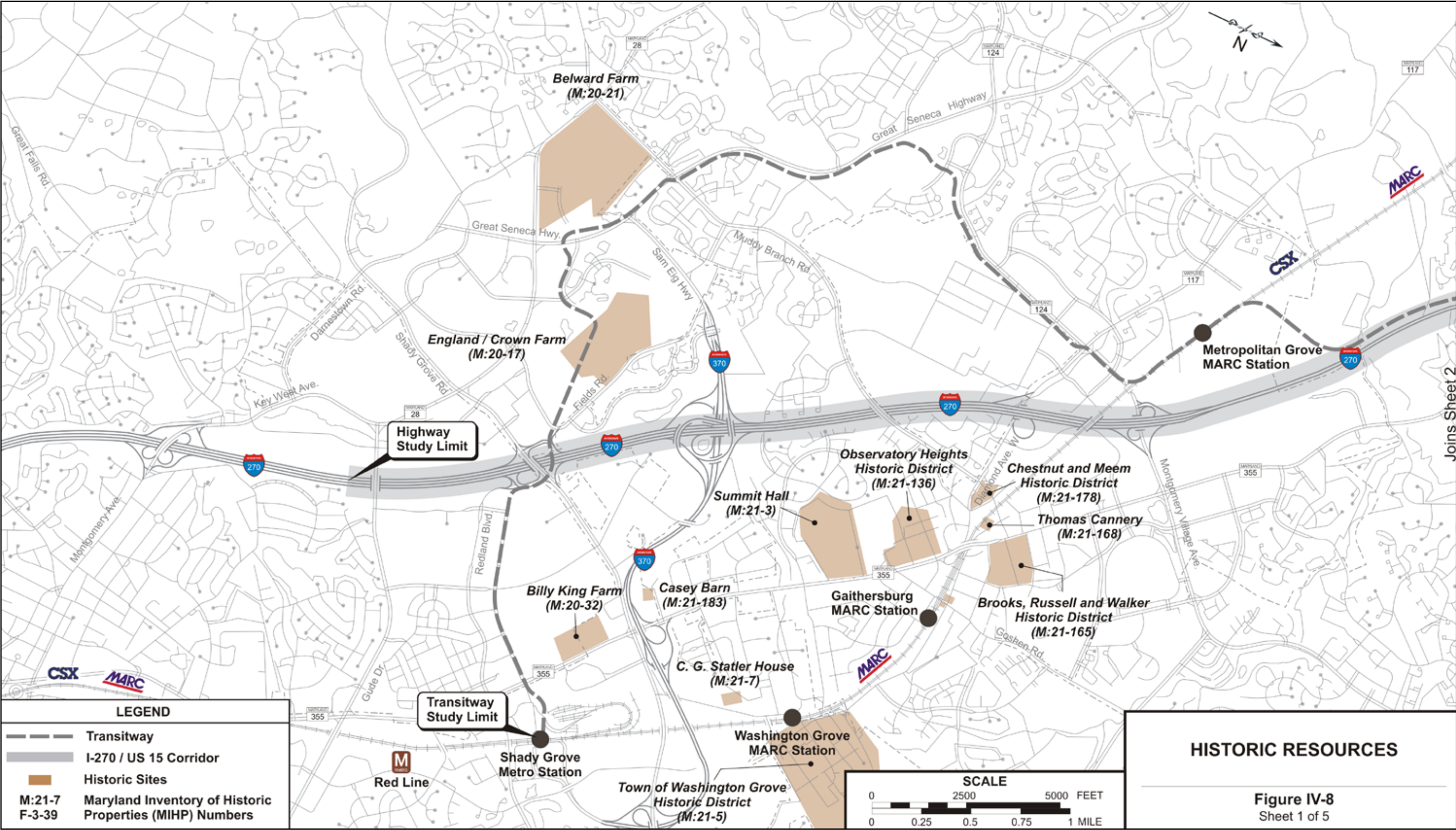




Figure IV-8: Historic Resources

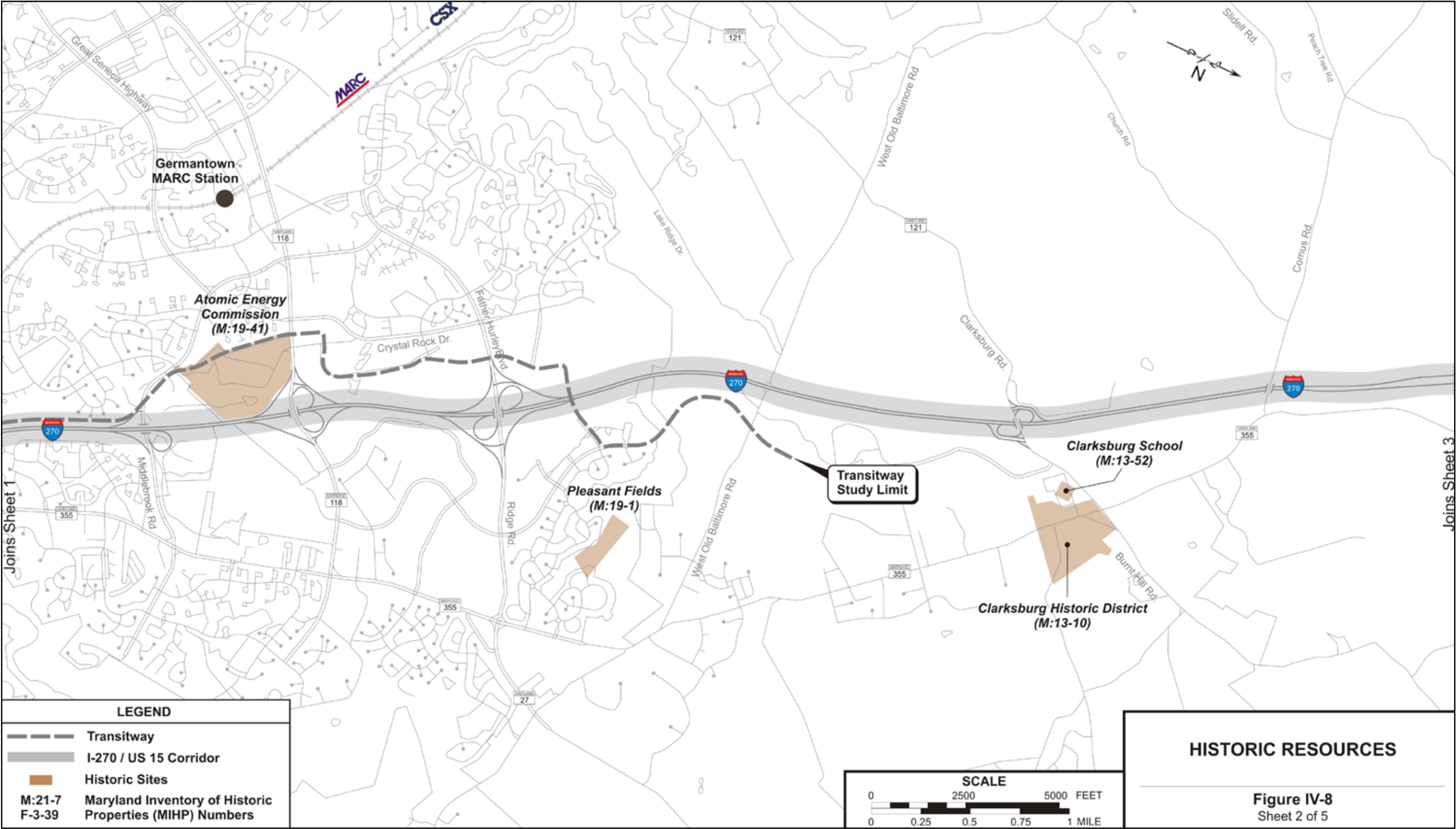




Figure IV-8: Historic Resources

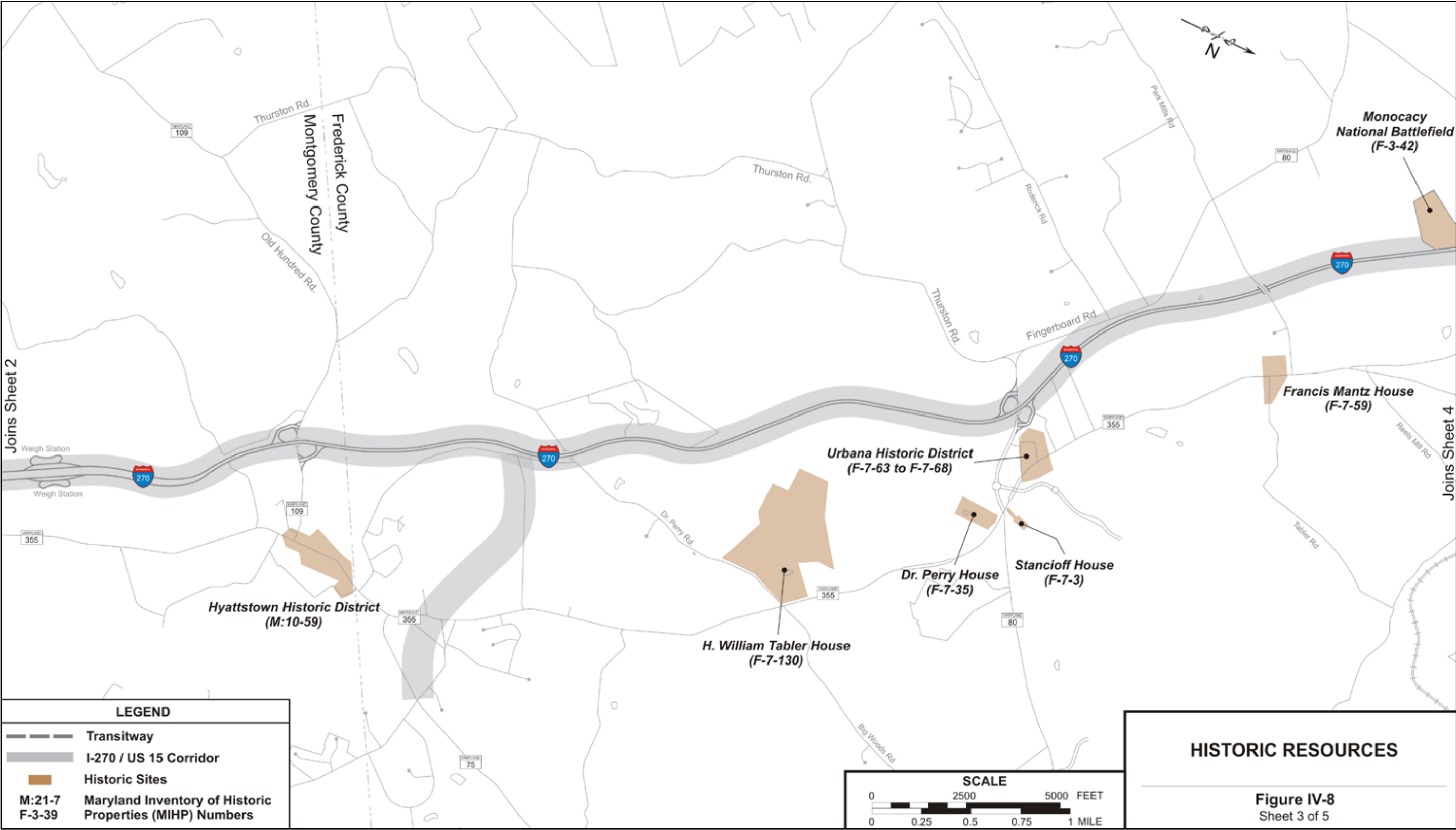




Figure IV-8: Historic Resources

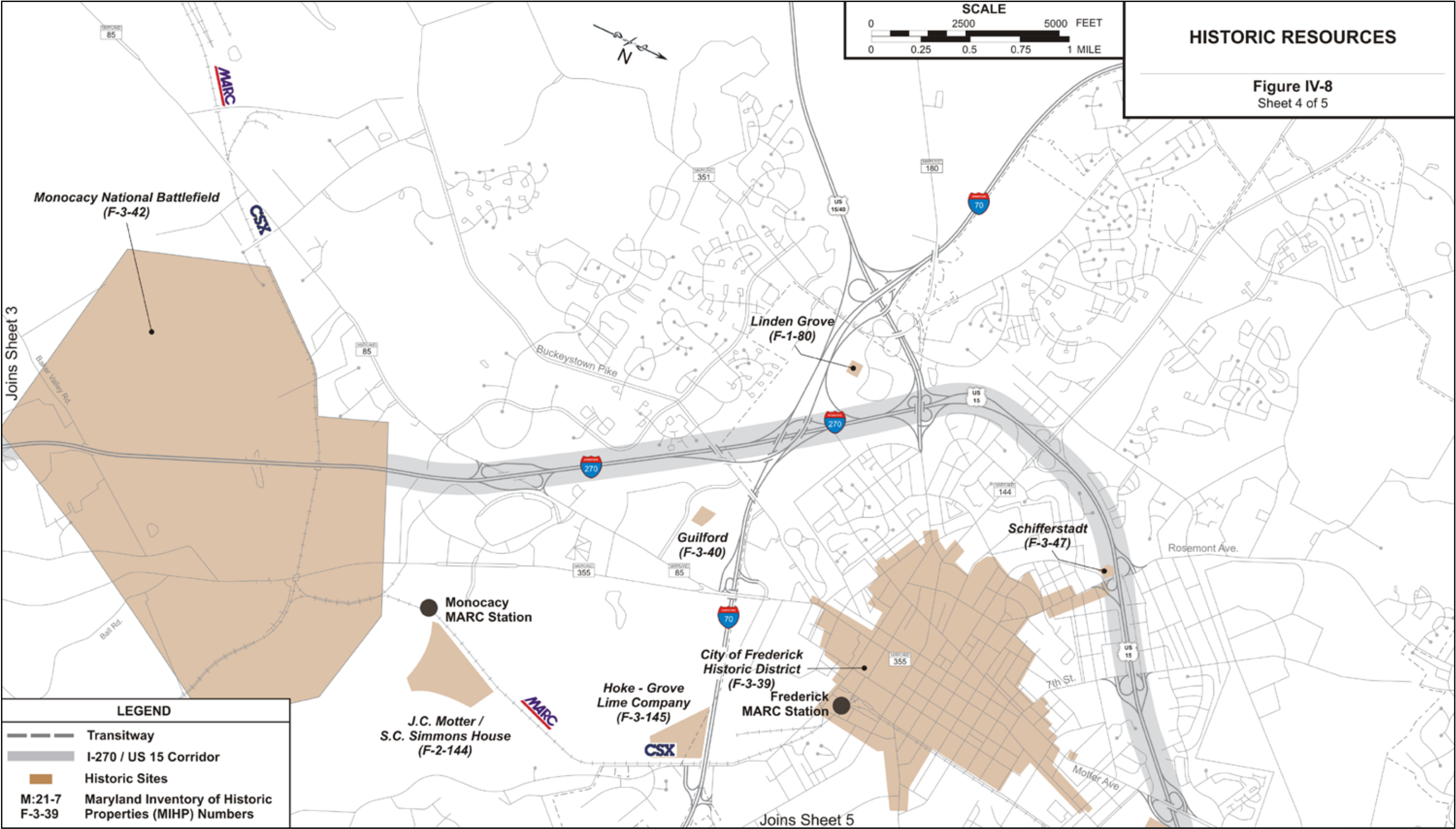
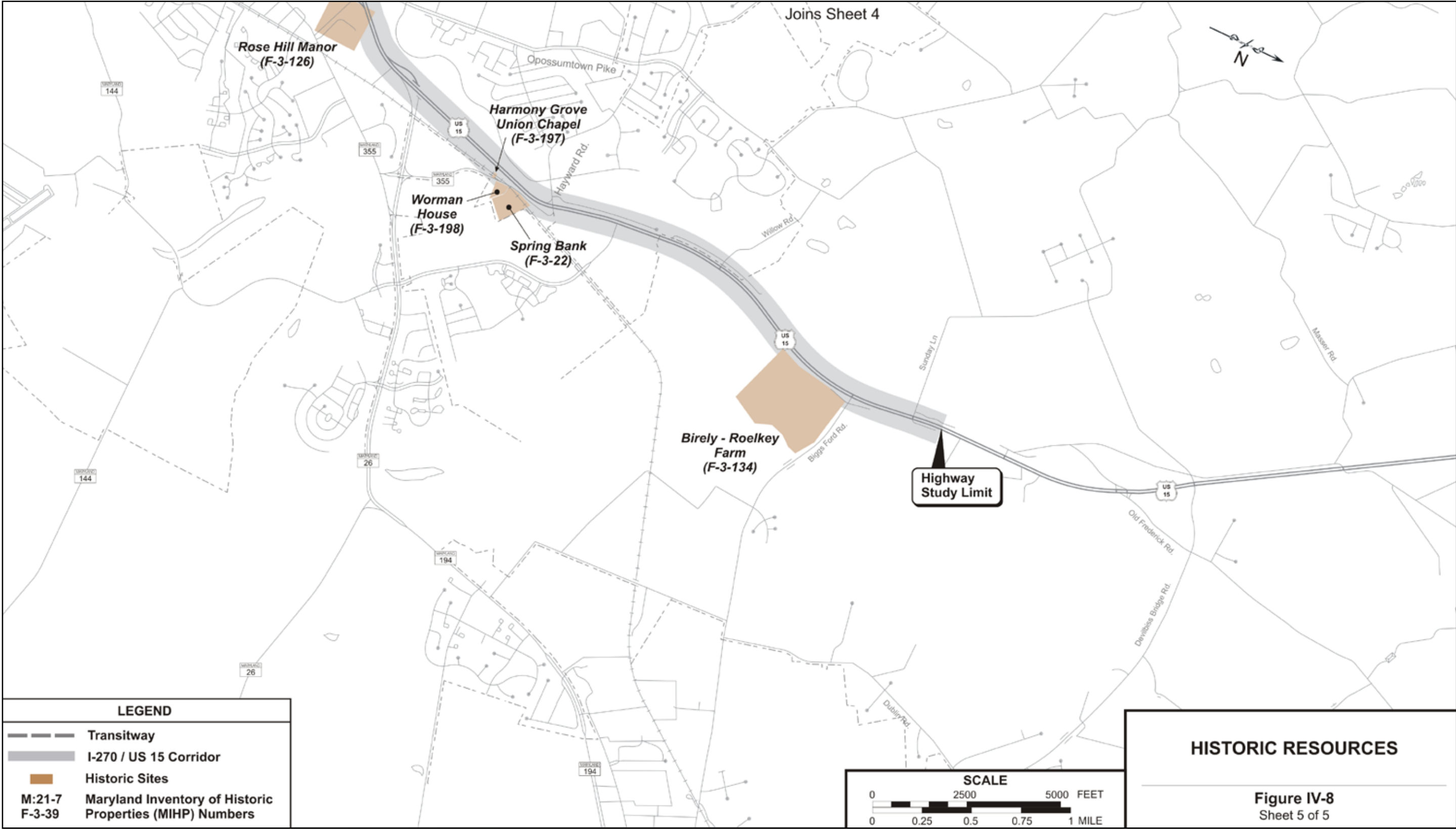




Figure IV-8: Historic Resources







SCENIC BYWAY AND HERITAGE AREAS  
IN THE I-270/US 15 CORRIDOR

Three scenic byway and heritage areas are located within the I-270/US 15 Corridor study limits. The Catoctin Mountain Scenic Byway, the Heart of the Civil War Heritage Area and the Journey Through Hallowed Ground were designated following the 2002 DEIS. The project team will continue coordinating the proposed alternatives with the Corridor Management Plans of these resources.

Catoctin Mountain Scenic Byway

The Catoctin Mountain Scenic Byway follows US 15 in Frederick County, Maryland. The route was designated as a National Scenic Byway on September 22, 2005. This byway is the gateway to mid-Maryland’s historic, scenic, and natural recreational opportunities along the Catoctin Mountains. For more byway information review the Corridor Management Plan at [www.co.frederick.md.us/index.asp?NID-1447](http://www.co.frederick.md.us/index.asp?NID-1447).

Heart of the Civil War State Heritage Area

The Heart of the Civil War Heritage Area is a state-certified heritage area encompassing Carroll, Frederick and Washington Counties. The area played a significant role during the Civil War ranging from military engagements, to troop field stations and hospitals that dotted the region during much of the war. The heritage area highlights and

promotes the stewardship of these historic, cultural and natural Civil War resources as well as the visitor and educational experience. The heritage area management plan was completed in 2006. For more heritage area information, review the management plan at [www.heartofthecivilwar.org/about-the-heritage-area/management-plan](http://www.heartofthecivilwar.org/about-the-heritage-area/management-plan).

Journey Through Hallowed Ground National Heritage Area

The Journey Through Hallowed Ground (JTHG) follows US Route 15, US Route 15 Business and Virginia Routes 20, 231, 22 and 53 from Gettysburg, Pennsylvania, to Monticello in Charlottesville, Virginia. The JTHG National Heritage Area was designated on May 8, 2008. The Journey makes it easy for the visitor to discover “Where America Happened” and includes nine Presidential homes, the largest concentration of Civil War Battlefield sites in the country, 18 historic Main Street communities along with the magnificent views, historic sites and the natural Piedmont landscapes. The JTHG corridor management plan includes Maryland SHA strategies developed and approved as part of the Catoctin Mountain Scenic Byway Corridor Management Plan. For more information on the JTHG go to [www.hallowedground.org](http://www.hallowedground.org)

Additional Historic Properties Evaluated

Worman House (F-3-198)

The Worman House is a two-story brick main pile with a rear wing dwelling, dating from between 1850 to 1870 by the Frederick County Landmarks Foundation. Additional outbuildings, all with vertical board and batten siding and dating to ca. 1890, include a small frame barn, a frame privy, and garden shed. The property also contains an unoccupied log building that is believed to have been a slave quarter. The Worman House retains excellent integrity and significant architectural distinction and is eligible for inclusion in the NRHP under Criterion C (architecture).

Harmony Grove Union Chapel (F-3-197)

Harmony Grove Union Chapel is a one-story frame church on the west side of Worman’s Mill Road. It has German siding and a gable façade with double entrances. The building is three bays long and has an interior chimney. The windows are six over six sash and some have louvered shutters. MHT determined the building to be eligible for the NRHP under Criterion A because of its association with early Methodism and Criterion C as an example of a type of rural church.

Atomic Energy Commission (AEC) Building (M:19-41)

The Atomic Energy Commission (AEC) Building, US Department of Energy, is a 109-acre property in the southwest quadrant of the I-270/MD 118 interchange. It is eligible for the NRHP under Criterion A because of its association with the development of new nuclear sciences from 1957 to 1975. The AEC Building is also eligible for the NRHP under Criterion C, as an example of a mid-twentieth century office building designed by Voorhees, Walker, Smith & Smith, a prominent architecture firm from New York City. Voorhees, Walker, Smith & Smith were well known for creating this kind of scientific research office park. The AEC Building also meets the requirements for Criterion Consideration G because of the significant activities that occurred within the building extending to 1975. During this period, more than one hundred nuclear power plants and ships were constructed or planned for construction in the United States. Its

design provides a campus or park-like setting for the office building that is an important physical contrast with the scientific work that occurs inside the building.

Additional Properties Evaluated for Eligibility in the NRHP

The Metropolitan Branch of the Baltimore & Ohio (B&O) Railroad (M:37-16) extends through the project area. Two SHA bridges, No. 1514800 and No. 1509600, that carry the CSX tracks over MD 124 and I-270, respectively, were evaluated for eligibility in the NRHP. Both were determined to be individually not eligible for inclusion in the NRHP as they do not contribute to the significance of the B&O Metropolitan Branch.

One additional property, 8435 Woodville Road, was evaluated and determined eligible for listing in the NRHP. The property is eligible under Criterion A for its association with the early agriculture history of Fredrick County and under Criterion C for the architectural design of the buildings, which retain good integrity of materials, workmanship, setting, feeling and association. The property is outside the APE and contains a potential wetland mitigation site. Because of the eligibility of this site, it may not be considered further as a potential site for mitigation purposes. However, as a final mitigation package is completed, this site may be evaluated for project impacts as needed. A second evaluated property at 8374 Woodville Road, (F-8-160) containing another potential wetland mitigation site, was determined not eligible.

Seneca Creek State Park (M:19-38) is a 6,290-acre resource traversed by both the I-270 highway and the CCT corridors and was also considered for eligibility. The area of the park through which the transportation corridor travels is undeveloped, and consists of the creek and second growth forest with a few open areas. There are no buildings, trails, or visitor amenities in this part of the park, nor are there any NRHP-listed or eligible historic standing structures. In coordination with the MD SHPO and in consideration of the large size of the park and the comparatively nominal right-of-way requirement (12.09 acres) for this project, a determination of eligibility was not undertaken at this time and there is no impact.



Impacts and Mitigation Measures

In their letter to the MD SHPO of January 10, 2008, SHA requested concurrence that Alternatives 6A/B and 7A/B will have an adverse effect on eight historic properties:

- England/Crown Farm (M:20-7),
- Belward Farm (M:20-21),
- Atomic Energy Commission Building (M:19-41),
- Monocacy National Battlefield (F-3-42),
- Schifferstadt (F-3-47),
- Rose Hill Manor (F-3-126),
- Spring Bank (F-3-22), and
- Birely-Roelkey Farm (F-3-134).

Impacts include the physical taking of a portion of the property within the historical boundary as well as visual and/or audible effects to the properties. Alternatives 6A/B and 7A/B will have no adverse effect on two properties:

- Harmony Grove Union Chapel (F-3-197) and
- Worman House (F-3-198).

It was also noted in the January 10, 2008 letter that Alternatives 3A/B, 4A/B, and 5A/B/C would have an adverse effect on the AEC Building, but have no adverse effect on Worman House or Harmony Grove Union Chapel. Alternatives 3A/B, 4A/B, and 5A/B/C continue to have adverse impacts on England/Crown Farm,

Belward Farm, Monocacy National Battlefield, Rose Hill Manor, and Birely-Roelkey Farm, as described in the 2002 DEIS, and would have a similar adverse effect on Schifferstadt as Alternatives 6A/B and 7A/B.

In their letter to the MD SHPO on April 4, 2008, SHA requested concurrence that two SHA bridges over the Baltimore and Ohio Metropolitan Branch were not individually eligible for listing in the NRHP. SHA also notified the MD SHPO that a determination of eligibility form was not completed for Seneca Creek State Park because of the nature of the resource and the project’s impact on the resource.

The MD SHPO completed their review and responded to both the January 10, 2008 and April 4, 2008 letters on June 26, 2008, concurring that the project would have an adverse effect on historic properties and confirmed those properties located within the project APE as listed above. *Table IV-17* summarizes the historic properties within the APE of Alternatives 6A/B and 7A/B and the effect that the project may have on each property.

All individual private landowners, as well as the General Services Administration (GSA), the Department of Energy, the National Park Service (NPS) and appropriate interested parties, have been notified of the potential adverse effect of Alternatives 6A/B and 7A/B on their respective historic properties and have been asked to join as consulting parties in the Section 106 process. Ongoing consultation will develop appropriate mitigation for adverse effects that cannot be avoided, including noise abatement measures and visual screening. An MOA will be entered upon by the MD SHPO, FHWA, FTA, SHA, and MTA that will contain stipulations to address the adverse effects at each historic property. As appropriate, the consulting parties may be invited to sign the MOA.

Archeological Resources

At this time, no further archeological investigations have been undertaken for Alternatives 6A/B and 7A/B because archeological impacts from these two alternatives are similar to previously investigated Alternatives 4A/B and 5A/B. Archeological review of the current project design

indicates that no identified NRHP eligible archeological sites within the APE will be impacted by the project, with the possible exception of 18FR30 (Monocacy National Battlefield). No significant archeological deposits associated with 18FR30 were found to extend into the APE. However, SHA assumes the presence of significant archeological resources within this NRHP listed property, which is also a National Historic Landmark, and will minimize and avoid impacts to the Landmark property to the maximum extent possible. Where additional impacts from previously unanticipated design features are identified, SHA will perform further archeological investigations. Temporary fencing to define the ultimate limits of disturbance is recommended during all phases of construction to ensure protection of significant archeological resources beyond the limits of the investigated APE.

SHA provided the results of its additional review to the MD SHPO on January 10, 2008. SHA will undertake further archeological investigation upon the resolution of ongoing design changes and following the identification of a Locally Preferred Alternative. Additional Phase I surveys are required for the newly identified O&M facility sites, park and ride lots, and other areas added to the APE since the 2002 DEIS. Further investigations will also be required in areas impacted by stormwater management ponds and mitigation sites, once those locations have been identified, and for other design changes made since the 2002 DEIS. The MOA, referenced previously, will include the commitment to undertake further necessary archeological investigations, including those identified in the preceding paragraph.

Table IV-17: Adverse Effects of Alternatives 6A/B and 7A/B

HISTORIC PROPERTY MIHP NUMBER	NRHP STATUS	EFFECT	DESCRIPTION OF IMPACT/EFFECT
Atomic Energy Commission Building M:19-41	NRE	Adverse	Highway requires 2.97 acres for right-of-way (ROW); CCT requires 7.87 acres for ROW
England/Crown Farm M:20-17	NRE	Adverse	CCT requires 3.60 acres for ROW
Belward Farm M:20-21	NRE	Adverse	CCT requires 0.64 acre for parking facility and hiker-biker trail
Monocacy National Battlefield F-3-42	NHL	Adverse	Highway requires 14.50 acres for ROW Noise impact of 76 dBA
Spring Bank F-3-22	NR	Adverse	Noise impact of 69 dBA
Rose Hill Manor F-3-126	NR	Adverse	Highway requires 0.19 acres for ROW Noise impact of 75 dBA
Schifferstadt F-3-47	NR	Adverse	Highway requires 0.09 acre outside of the sewer & drainage easement for ROW Noise impact of 68 dBA
Birely-Roelkey Farm F-3-134	NRE	Adverse	Highway requires 13.42 acres for ROW

*Note: There will be visual impacts to all properties listed as having adverse effects.*  
*NR = listed in the National Register*  
*NRE = eligible for listing in the National Register*  
*NHL = National Historic Landmark*

## E. Section 4(f) Summary

This section provides a summary of the regulatory framework and methods used to evaluate Section 4(f) properties, followed by a summary description of existing parks/recreation areas and historic properties in Montgomery and Frederick Counties. Existing conditions, impacts, avoidance alternatives and measures to minimize harm are summarized for each of the thirteen publicly-owned public parks and recreation areas and seven significant historic properties that may be impacted by Alternatives 6A/B and 7A/B. A summary of the coordination to date finishes the section. Details of the Section 4(f) evaluation can be found in the *I-270/US 15 Multi-Modal Corridor Study Draft Section 4(f) Evaluation* (March 2009).

### Regulatory Framework and Methodology

Section 4(f) of the U.S. Department of Transportation Act of 1966, 49 USC 303(c), as implemented through 23 CFR 774 jointly by the Federal Highway Administration (Administration) and the Federal Transit Administration (Administration), requires that the proposed use of land from any publicly-owned public park, recreation area, wildlife and/or waterfowl refuge, or any significant historic site, as part of a federally funded or approved transportation project is not permissible unless:

- a) The Administration determines there is no feasible and prudent avoidance alternative to the use of land from the property, and the action includes all possible planning to minimize harm to the property resulting from such use (23 CFR 774.3(a)); or
- b) The Administration determines the use of the Section 4(f) property, including any measures to minimize harm (such as avoidance, minimization, mitigation, or enhancements measures) committed to by the applicant, will have a *de minimis* impact on the property [SAFETEA-LU Section 6009(P.L. 109-53) and 23 CFR 774.3(b)].

Further, Section 4(f) defines the use of property as:

- Land from a 4(f) resource is permanently incorporated into a transportation facility;

- A temporary occupancy of land that is adverse in terms of the Section 4(f) statute’s preservationist purposes;
- A constructive use; or
- A *de minimis* impact on the property, as defined in 23 CFR 774.17:
  - (1) For historic sites, *de minimis* impact means that the Administration has determined, in accordance with 36 CFR part 800, that no historic property is affected by the project or that the project will have “no adverse effect” on the historic property in question.
  - (2) For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f).

Further, constructive use is only possible in the absence of permanent incorporation or temporary occupancy of the type that constitutes a use of 4(f) land. Constructive use only occurs where, including mitigation, the proximity impacts of a project on Section 4(f) property are so severe that the activities, features or attributes that qualify the property for protection under Section 4(f) are substantially impaired (diminished).

Any final action requiring the use of such land will document and demonstrate that the proposed action includes all measures to minimize harm to the property as a result of such use. This evaluation also provides notification of the Administration’s intent to pursue *de minimis* impact findings for some park properties. Per 23 CFR 774.3(b), an analysis of feasible and prudent avoidance alternatives is not required for properties that would incur a *de minimis* impact, as a *de minimis* impact determination inherently includes the requirement for all possible planning to minimize harm (23 CFR 774.17).

The methodology to evaluate Section 4(f) resources included the following steps: identification of resources (including field verification of existing conditions and coordination with the agency with jurisdiction over the resource); identification of potential uses (impacts) of Section 4(f) properties caused by Alternatives 6A/B and 7A/B (potential property acquisition, potential

impacts to activities, other potential impacts such as noise and visual effects); exploring potential avoidance alternatives; and evaluating planning to minimize harm. Quantitative efforts included measurements of property acreage impacts, predicting future noise levels, and projecting future air quality in the project corridor. Qualitative efforts included an assessment of visual impacts, including those from mitigation efforts. Throughout the Section 4(f) process, SHA and MTA have consulted with the SHPO, owners of the historic resources, and parks officials in matters of potential impacts, potential avoidance and minimization efforts. The project team, through ongoing consultation with appropriate park jurisdictional officers, intends to pursue *de minimis* findings for the following public parks: Malcolm King Park, Morris Park, Seneca Creek State Park, Middlebrook Hill Neighborhood Conservation Area, North Germantown Greenway, Black Hill Regional Park, Little Bennett Regional Park, Urbana Lake Fish Management Area, and Urbana Community Park. Correspondence documenting the consultation process is summarized at the conclusion of this section.

### Section 4(f) Properties

#### Publicly-Owned Public Parks and Recreation Areas

Montgomery County has 66,067 acres of parklands, recreation areas and open space. This total includes approximately 32,700 acres of M-NCPPC parkland, 12,000 acres of state-owned parkland and 3,100 acres of national parkland. Two-thirds of the land in regional parks remains undeveloped in its natural state to help protect the environment. The M-NCPPC owns more than 400 developed parks that provide diverse active and passive recreational opportunities.

Frederick County has 32,187 acres of parklands including municipal, county, state, federal and school sites. Almost 62 percent of this is state (11,267 acres) and federal (8,681 acres) parkland. The City of Frederick owns over 60 parks and recreation areas of various size and amenities. Frederick’s parks offer a variety of resources for active recreation or provide for the preservation of areas in their natural, undeveloped state.

The departments of education of both counties provide recreational areas for public use, and some private organizations also provide for open space/parklands for citizens to enjoy. (Section 4(f) does not consider the use of privately-owned parklands.)

Many parks and recreation areas abut the existing I-270/US 15 corridor and/or proposed CCT alignment, thus making total avoidance of these resources challenging. I-270 bisects several parks, most notably the Monocacy National Battlefield. The thirteen publicly-owned public parks and recreation areas that would be impacted by Alternatives 6A/B and 7A/B are listed in **Table IV-18** and shown on **Figure IV-9 (Sheets 1 through 5)**. The table includes information about each park and the potential impacts that would occur with the implementation of Alternative 6A/B or 7A/B. Each potentially impacted park is also shown on the **Plan Sheets** in **Appendix A**.

Malcolm King Park is located in eastern Gaithersburg, northwest of the I-270/I-370/Sam Eig Highway interchange (**Sheet HWY-1, Appendix A**), adjacent to a multi-unit residential community. The 72.9-acre park is bordered on the east by I-270. The majority of this park acreage remains in its natural wooded state. Park amenities include one basketball court, a 1¼-mile hiker-biker trail, fitness trail, picnic tables, playgrounds, two tennis courts, and tot lots.



Malcolm King Park





Table IV-18: Section 4(f) Parks and Recreation Areas Impacted by Alternatives 6A/B and 7A/B

PARK NAME PARK OWNER	PARK OWNER	SIZE	FUNDING SOURCES <sup>1</sup>	IMPACT <sup>2</sup>	USE	LAND USE OF AREA IMPACTED	AVOIDANCE OPTION <sup>3</sup>	MINIMIZATION OPTIONS		PLAN SHEET	IMPACT AS PERCENT OF TOTAL ACRES	AMENITIES
								6:1 SLOPE OPTION <sup>2,4</sup>	RETAINING WALL			
Malcolm King Park	City of Gaithersburg	72.9 acres	POS	0.75 acre	SB widening to add ETL direct access ramp & one SB lane; extend accel/decel lanes	Embankment: grassy edge with some trees	Retaining Wall	1.28 acres	n/a	HWY-1	1.03 %	Basketball court, hiking trail, fitness trail, picnic tables, playgrounds, tennis courts, tot lots
Morris Park	City of Gaithersburg	37.2 acres	POS	0.21 acre	Realign I-370 ramp to NB I-270 to access new NB lane	Mature forest edge	Retaining Wall	0.23 acre	n/a	HWY-1	0.56 %	Football/soccer field, basketball court, tennis courts, baseball fields, playground areas, picnic tables, grills
Seneca Creek State Park	MDNR	6,290 acres	LWC, POS	H-6.93 acres T-5.16 acres 12.09 total	Outside widening to add one new lane in each direction	Forested floodplains and upland forest; crosses Seneca Creek	n/a	H-14.27 acres	H-1.65 acres	HWY 2&3 TRAN 4&5	0.19 %	Biking trails, boat rental, cross-country skiing, campfire programs, fishing, flat water canoeing, hiking trails, hunting, playground, disk golf course, riding trails
Middlebrook Hill Neighborhood Conservation Area	M-NCPPC	11.5 acres	POS	2.13 acres	Outside widening to add one new lane in each direction	Natural forest buffer edge	n/a	2.86 acres	0.21 acre	HWY-3	18.52 %	Neighborhood conservation area; undeveloped
North Germantown Greenway	M-NCPPC	300 acres	Developer Funding	0.78 acre	Outside widening to accommodate barrier-separated ETLs	Hardwood forest	n/a	1.40 acres	0.28 acre	HWY-4	0.26 %	Athletic field, playground, picnic area, basketball court, trail (construction in progress)
Black Hill Regional Park	M-NCPPC	1,843 acres	POS, Mont. Co Capital Program, Mont Co bonds	8.61 acres	Outside widening to accommodate barrier-separated ETLs	Mature forest	n/a	19.52 acres	4.09 acres	HWY 4&5	0.47 %	Fishing, boating, hiking, picnicking and nature center, mooring sites and equestrian trails
Little Bennett Regional Park	M-NCPPC	3,648 acres	POS, Mont Co Capital Program	0.29 acre	Outside widening to accommodate barrier-separated ETLs	Floodplain and pasture; crosses Bennett Creek	Centerline Shift	1.13 acres	0.05 acre	HWY-7	0.01 %	Golf, camping, picnicking, hiking
Urbana Lake Fish Management Area	MDNR	70 acres		1.23 acres	Outside widening to accommodate barrier-separated ETLs	Hardwood forest and wetlands	Centerline Shift	2.42 acres	0.41 acre	HWY-8	1.76 %	Recreational fishing area
Urbana Elementary School	Frederick County	21 acres		1.78 acres	Extend ramp from MD 80 to NB I-270	Wooded hedgerow; softball field	n/a	1.98 acres	0.42 acre	HWY-8	8.48 %	Ball fields, soccer field, tennis/basketball courts, and playground
Urbana Community Park	Frederick County	20 acres	POS	0.44 acres	Extend ramp from MD 80 to NB I-270	Grasses and minor shrub vegetation buffer	n/a	0.55 acre	0.01 acre	HWY-9	2.20 %	Ball fields, grills, horseshoe pits, picnic shelters, play equipment, soccer fields, tennis courts, volleyball courts
Monocacy National Battlefield	National Park Service	1,647 acres	NPS – various	14.50 acres	Addition of one (Alt 6) or two (Alt 7) GP lanes through outside widening on SB side	Hardwood forest, hedgerows, farm fields and pasture; crosses Monocacy River	n/a	23.63 acres	3.71 acres	HWY-9- ,10,11	1.43 %	Landscape of historic Civil War battlefield; historic structures throughout battlefield area; interpretive exhibits and visitor center.
Baker Park	City of Frederick	53 acres	Frederick City funded	0.26 acres	Expansion of US 15 from two to three lanes plus auxiliary lane in each direction	Grassland and hedgerow	n/a	1.08 acres	0.02 acre	HWY-13	0.49 %	Band shell, playgrounds, swimming pool, softball fields, a little league field, tennis courts, a covered bridge, a lighted ice-skating area, picnic area with 10 pavilions
Rose Hill Manor Park	Frederick County	43 acres	POS	1.04 acres	Expansion of US 15 from two to three lanes plus auxiliary lane in each direction	Grassland and wooded hedgerow	n/a	2.60 acres	0.16 acre	HWY-13,14	2.42 %	Picnic facilities; carriage museum; antique farm museum

Notes: <sup>1</sup>POS = Program Open Space; LWC = Land and Water Conservation Funds  
<sup>2</sup>The highway design includes the use of steeper 2:1 slopes at all parks and recreation area locations (rather than conventional 6:1 slopes) to minimize impacts. The transitway design includes a minimized cross section and retaining walls in appropriate locations to minimize impacts.  
<sup>3</sup>Installation of retaining walls may impact the visual and aesthetic character of parks.  
<sup>4</sup>This column shows the impact that would have occurred using the conventional 6:1 slope design and identifies minimization efforts already included in the current design.  
Additional information regarding impacts to parks and recreation areas (noise and/or visual impacts) may be found in the **Social Resources, Noise and Vibration**, and **Visual Quality Sections** of this chapter.

Figure IV-9: Section 4(f) Resources

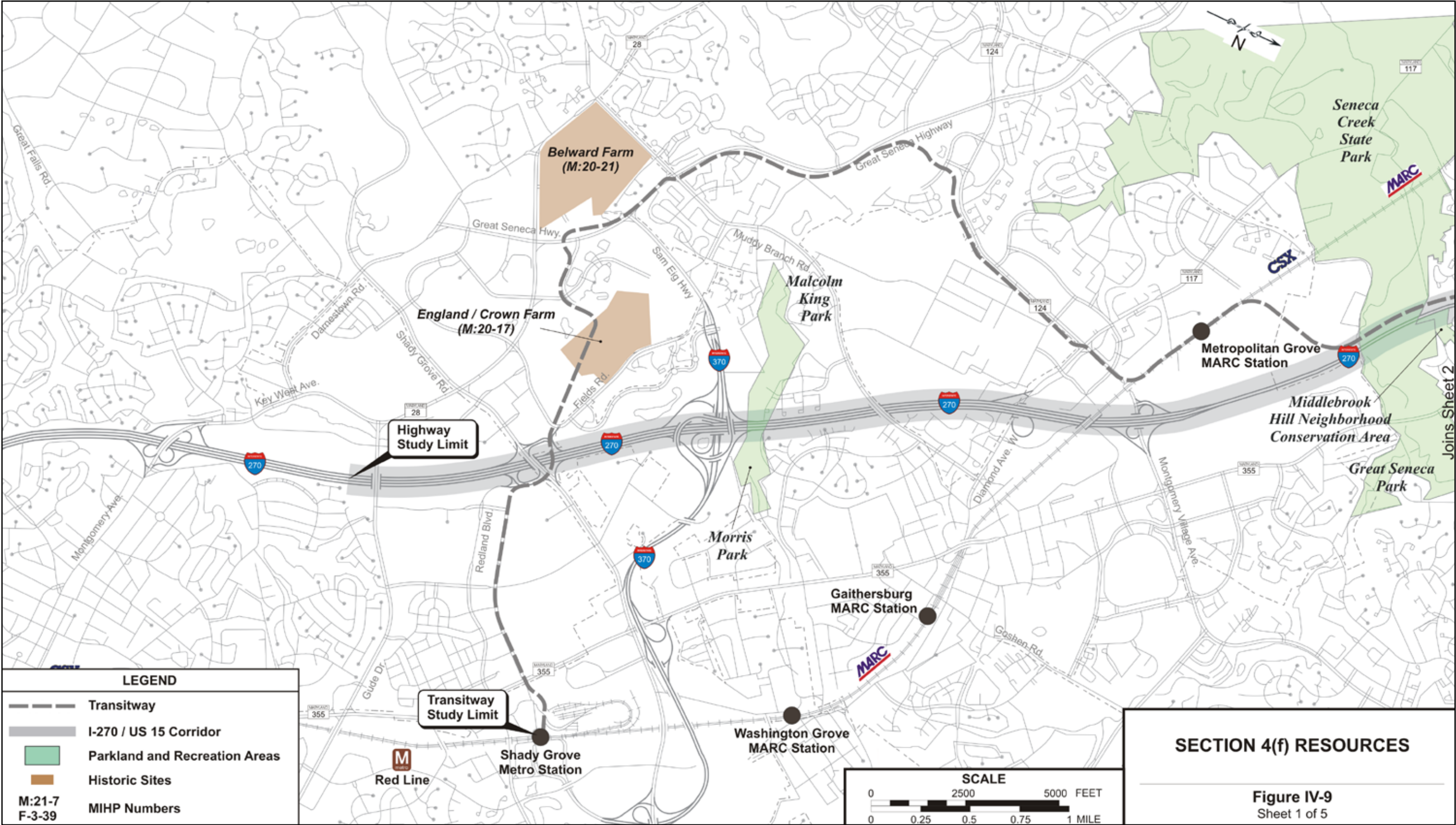




Figure IV-9: Section 4(f) Resources

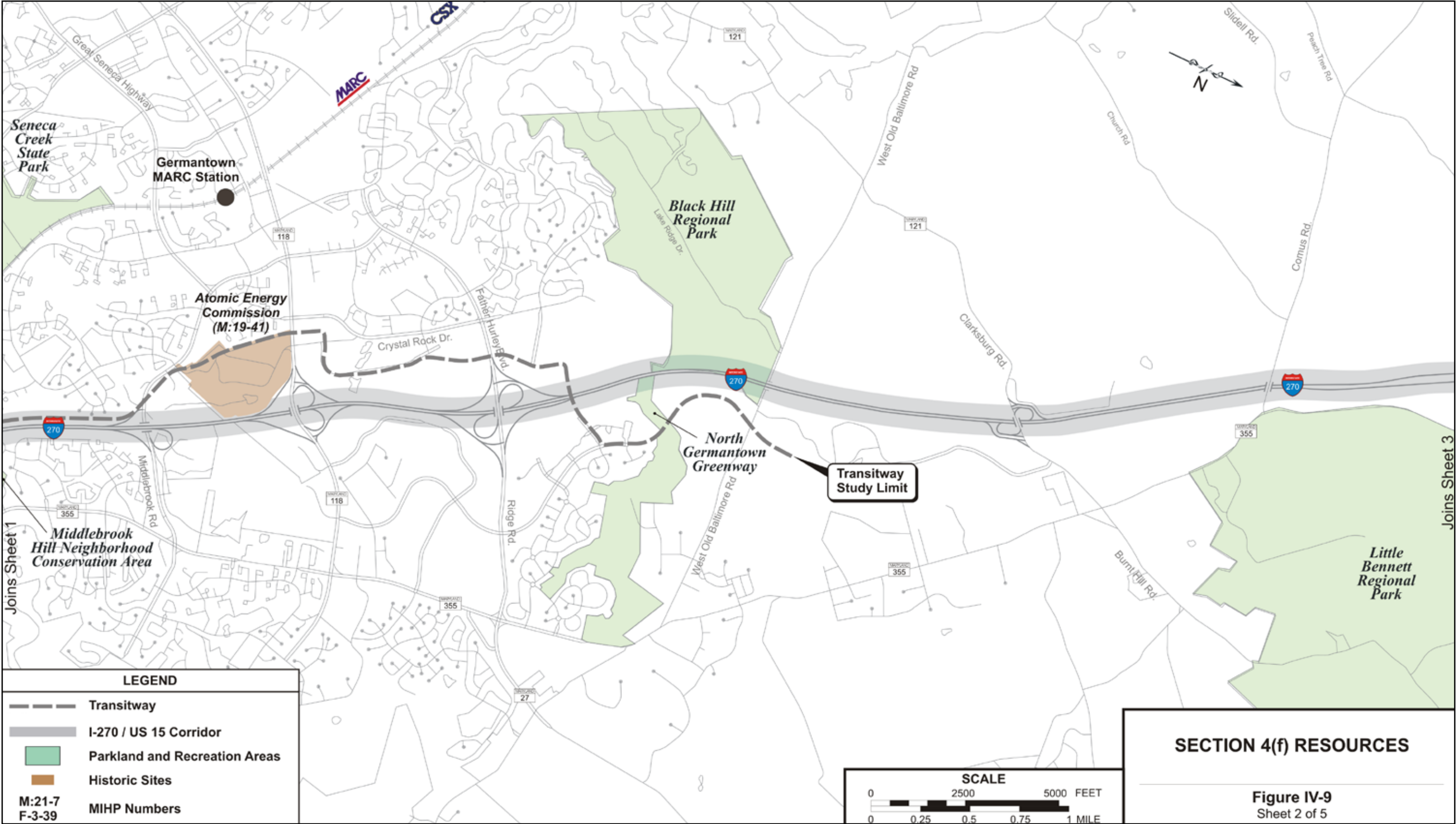


Figure IV-9: Section 4(f) Resources

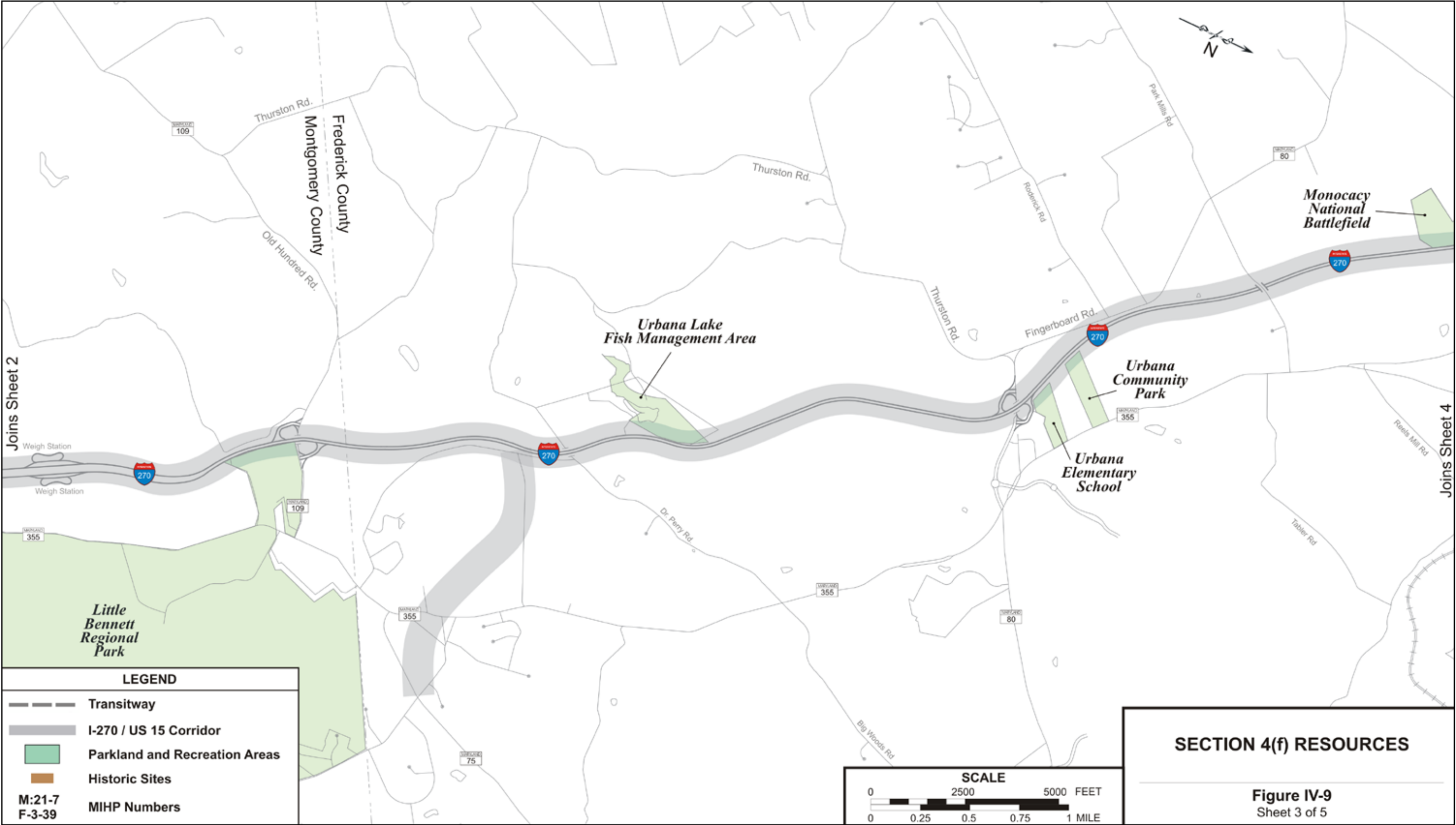




Figure IV-9: Section 4(f) Resources

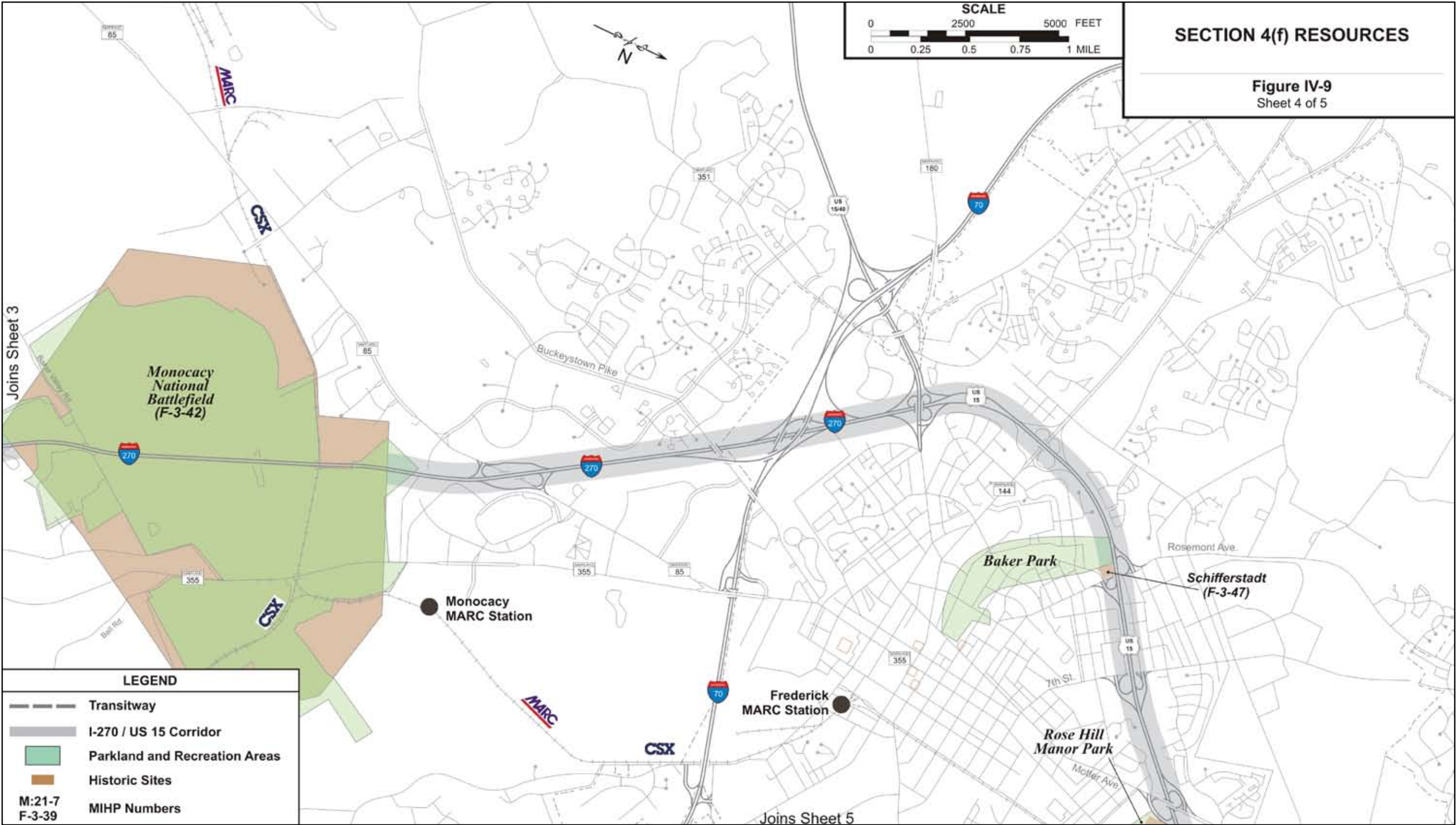
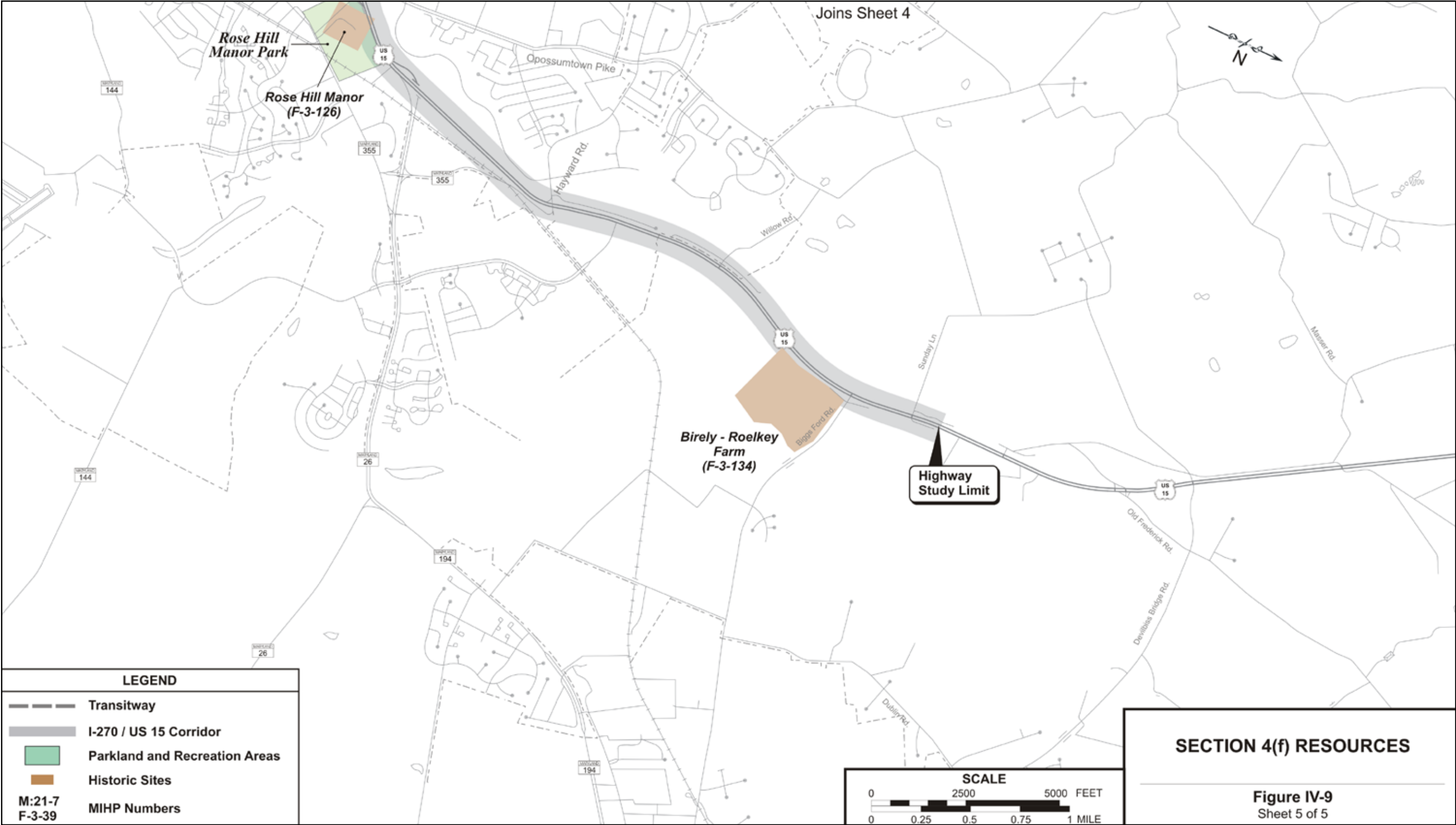


Figure IV-9: Section 4(f) Resources





MONOCACY NATIONAL BATTLEFIELD

Monocacy National Battlefield lies in Frederick County, Maryland, in the heavily populated Baltimore-Washington metropolitan area, approximately 3 miles south of the center of Frederick, the second largest city in Maryland. Although this area of the county is rapidly building up, the national battlefield is remarkably free of intrusive elements. Only the modern Interstate Highway 270 (I-270) intrudes on the historic landscape, essentially bisecting the battlefield.

The national battlefield’s boundaries encompass most of the lands upon which the Battle of Monocacy was fought. Six farmsteads that existed during the battle still exist within the national battlefield and retain essentially their Civil War era landscape appearance. Surrounding agricultural fields retain the feel of the Civil War era landscape, with few changes to field configurations and fence rows. Crops have gradually changed over the years from small grains to hay and corn, but the overall agricultural environment remains remarkably intact. Forested areas include Brooks Hill and lands along the Monocacy River and Bush Creek. These form an exceptional buffer from development outside the boundaries.

Approximately 2 miles of the Monocacy River runs through the national battlefield. The CSX Railroad (Baltimore & Ohio during the Civil War) also extends through the national battlefield, paralleling the Monocacy River and Bush Creek. Historic Urbana Pike (Maryland Highway 355) runs north-south through the eastern part of the national battlefield.

Urbana Pike also is the main access for visitors to the battlefield. This highway is heavily used by commuters, residents, business vehicles, and trucks. In the national battlefield, the highway is two lanes with paved shoulders on the north side of the Monocacy River, and on the south side of the river it is two lanes with narrow, unpaved shoulders. South



of the national battlefield it remains two lanes with narrow, unpaved shoulders. Urbana Pike provides much of the access to important features, and the heavy volumes and high speeds of commuter traffic and commercial vehicles create a safety problem and encroach upon the visitor experience.

The original on-site visitor contact station was replaced by a new visitor center completed in 2007. Much of the national battlefield has remained closed to visitors as historic features were rehabilitated or restored. As a result, visitation figures (about 14,700 in 2003) reflect the low level of knowledge in the community and the nation that Monocacy National Battlefield exists or is open. With land acquisition nearly complete, opening of more of the national battlefield to visitation probably will increase visitation considerably.

[Excerpted from the *Draft General Management Plan Environmental Impact Statement*, National Park Service, US Department of the Interior: (2008)]

Morris Park is located in eastern Gaithersburg, northeast of the I-270/I-370/Sam Eig Highway interchange (**Sheet HWY-1, Appendix A**), adjacent to the Summit Hall Elementary School and multi-use residential communities. The 37.2-acre park is bordered on the west by I-270 on the west. Park amenities include a football/soccer field, basketball court, three tennis courts, two baseball fields, playground areas, picnic tables, and grills.

Seneca Creek State Park encompasses 6,290 acres and is located in Montgomery County between Gaithersburg and Germantown (**Sheets HWY-2, HWY-3, TRAN 4 and TRAN 5, Appendix A**). The park is traversed by existing I-270 as it crosses Seneca Creek. Much of the park remains in a natural state extending along Seneca Creek. Park amenities include biking trails, boat rental, cross-country skiing, campfire programs, fishing, flat-water canoeing, hiking trails, hunting areas, a playground, a disc golf course, and riding trails.

Middlebrook Hill Neighborhood Conservation Area (NCA) is located in Montgomery County north of Seneca Creek State Park and adjacent to the existing I-270 corridor on the northbound side (**Sheet HWY-3, Appendix A**). The park is a wooded, undeveloped parcel of land that is being managed as a conservation area and does not offer active recreational opportunities.

North Germantown Greenway is a stream valley park (SVP) located on several parcels of land between I-270 and Blunt Road in Montgomery County. The park is located east of I-270 between Father Hurley Boulevard and West Old Baltimore Road (**Sheet HWY-4, Appendix A**), adjacent to Black Hill Regional Park. The SVP incorporates the Ridge Road Recreational Park east of MD 355, which is currently under construction and will include recreational facilities such as an athletic field, playground, picnic area, basketball court and a trail. The portion of the North Germantown Greenway adjacent to I-270 has recreational trails and is composed of mature forest.

Black Hill Regional Park is located west of I-270 between Germantown and Clarksburg (**Sheets HWY-4 and HWY-5, Appendix A**). The park includes the 505-acre Little Seneca Lake. Black Hill Regional Park lies adjacent to southbound I-270 for approximately 4,000 feet south of West Old Baltimore Road, and a small



Black Hill Regional Park

portion of the park is located along northbound I-270 south of West Old Baltimore Road. The portion of the park adjacent to I-270 is mature forest.

Little Bennett Regional Park is located to the east of I-270 in northern Montgomery County, just south of the Frederick County line and the I-270/MD 109 interchange (**Sheet HWY-7, Appendix A**). Little Bennett Regional Park amenities include a golf course, camping and picnic areas, hiking and equestrian trails. A concept plan includes more extensive camping areas, trails, and passive recreation facilities. The portion of the park adjacent to I-270 is undeveloped. An additional 59 acres adjacent to I-270 was acquired on January 30, 2007. M-NCPPC has not yet established the park’s boundary within this parcel, but they have indicated land adjacent to I-270 right-of-way will not be included within the park’s boundary.



Little Bennett Regional Park



The Urbana Lake Fish Management Area is adjacent to I-270 southbound between Urbana and Hyattstown, north of the proposed MD 75 interchange (**Sheet HWY-8, Appendix A**). The area’s sole amenity is the opportunity to fish.

Urbana Elementary School is located in northwestern Urbana, just north of the I-270/MD 80 interchange (**Sheet HWY-8, Appendix A**). The recreation area is open to public use and includes two ball diamonds, soccer field, tennis/basketball courts and a playground. The intramural ball field is located west of the school building and is bordered by I-270 at its western edge. Coordination with the school has emphasized the importance of not impacting public recreational uses of school property, e.g., the activities that take place on the field adjacent to I-270.



Urbana Elementary School Recreation Area



Urbana Community Park

Urbana Community Park is located in northwestern Urbana (**Sheet HWY-9, Appendix A**). The park is bordered on the west by I-270. Park amenities include ball fields, grills, horseshoe pits, picnic shelters, play equipment, soccer fields, tennis courts, and volleyball courts.



Monocacy National Battlefield

Monocacy National Battlefield is a National Historical Landmark (NHL) in Frederick County and is under the jurisdiction of the National Park Service (NPS). The park’s 1,647 acres are bisected by I-270 (originally constructed in the 1950s as US 240), running from the northwest to the southeast (**Sheets HWY-9, HWY-10 and HWY-11, Appendix A**). The battlefield was established in part by an Act of Congress in 1934 and through deed transfers between private owners, land trusts and NPS. Open space and the I-270 Technology Business Park are situated to the north, open space to the south and east, and Omega Center, McKinney Industrial Park, and

Dudrow Business Park to the west. The battlefield was listed in the National Register of Historic Places (NRHP) in 1966 and listed as a National Landmark in 1973. It was the location of an important Civil War battle, the Battle of Monocacy, as judged by its consequences: Union forces conducted a strong defense that delayed the advance of Confederate forces under General Jubal Early on July 9, 1864.

The battlefield, which receives more than 18,000 visitors each year, is a historic landscape that encompasses land valued and utilized for farming and transportation, retaining many of the traditional landscape features, such as farm fields, roads, drives, lanes, fords, bridges and road traces. Historical use by the military for troop encampments and one camp established during the Civil War also figure in the significance of the landscape and existing structures. Examples of the structures that are key features relative to the Civil War battle are Hermitage (a.k.a. Best Farm), Araby Mill, Edgewood, Thomas Farm, Lewis Farm, Gambrill Farm, Worthington Farm and Baker Farm. The battlefield landscape remains largely unchanged from when the Confederate and Union troops fought aside from the presence of I-270. NPS is proceeding with development of a General Management Plan that will include interpretive plans. The new Visitor Center at Best Farm opened on June 27, 2007.



Baker Park

Baker Park is located in the City of Frederick on 53 acres of land (**Sheet HWY-13, Appendix A**). The linear park borders US 15 to the west and extends to the east. Park amenities include a band shell, playgrounds, a swimming pool, softball and baseball fields, tennis courts, a covered bridge, a lighted ice-skating area, and a picnic area with 10 pavilions. Some of the park’s notable features are its

bell tower, a gazebo, a lake with a boathouse, and a 1913 armory which has since been converted to a recreation center. In addition to the park features, the historic Schifferstadt home is located within the Baker Park boundaries.

Rose Hill Manor Historic Park lies in northern Frederick City, just east of Fort Detrick (**Sheets HWY-13 and HWY-14, Appendix A**). The park’s 43 acres are bordered on the west by US 15. The park amenities include museum facilities, picnic facilities, and open space. The park features the Frederick County Museum, former Maryland Governor Thomas Johnson’s retirement home (Rose Hill Manor), and other historic buildings.



Rose Hill Manor Historic Park

Significant Historic Resources

The National Register of Historic Places (NRHP) has recorded information on 2,200 historic sites in Montgomery County that are included in or eligible for inclusion in the NRHP. Historic properties can be buildings, landscapes, districts, or archeological sites. Many are privately owned, and many are open to the public for interpretive tours and historical programs. In Frederick County, there are over 2,500 sites listed in or eligible for listing in the National Register. As the MD SHPO, the Maryland Historical Trust (MHT) assists the people of Maryland in identifying, studying, evaluating, preserving, protecting and interpreting the state’s significant prehistoric and historic districts, sites, structures, cultural landscapes, heritage areas, and artifacts.





Table IV-19: Historic Resources Impacted by Alternatives 6A/B and 7A/B

PROPERTY NAME	MIHP NUMBER <sup>1</sup>	NRHP STATUS	ELIGIBILITY CRITERIA <sup>2</sup>	SIZE	PUBLIC/ PRIVATE <sup>3</sup>	POTENTIAL IMPACT <sup>4</sup>	USE	USE OF AREA IMPACTED	AVOIDANCE OPTION <sup>5</sup>	MINIMIZATION OPTIONS <sup>5</sup>		PLAN SHEET	OTHER IMPACTS	COMMENTS
										6:1 SLOPE OPTION <sup>6</sup>	RETAINING WALL			
England/Crown Farm	M:20-17	Eligible	A	76 acres	Private	T-3.60 acres	T-Exclusive transitway alignment to accommodate LRT or BRT	Fallow farm field; scheduled for development	n/a	n/a	Realign from Master Plan (developer option) 3.43 acres	TRAN-2	Noise and visual	Property under development; historic boundary may be reduced
Belward Farm	M:20-21	Eligible	A	107 acres	Private	T-0.64 acre	T-Parking structure and hiker/biker trail	Fallow farm field; scheduled for development	Design Modification	n/a	n/a	TRAN-3	Noise and visual	Property under development (JHU Campus); historic boundary was reduced in 2002.
Atomic Energy Commission Building	M:19-41	Eligible	A, C	109.2 acres	Private	H-2.97 acres T-7.87 acres	H-Outside SB widening, ramp relocation & ETL direct access ramps T-Exclusive transitway alignment west of building to accommodate LRT or BRT	Hedgerow and trees, walking path; transitway crosses access driveway and impacts outbuilding	n/a	H-10.20 acres	H-1.44 acres	HWY-3 TRAN-5	Noise and visual	NR boundary limited to tax parcel area. Transitway impacts west property boundary; highway impacts are on the east side.
Monocacy National Battlefield NHL	F-3-42	Listed	A	1,920 acres	Public	12.52 acres	Addition of one (Alt 6) or two (Alt 7) GP lanes through outside widening on SB side	Hedgerows, farm fields and pasture; crosses Monocacy River	n/a	20.01 acres	3.50 acres <sup>7</sup>	HWY-9,10,11	Noise and visual	NR boundary not coincident with park boundary. Preliminary consultation resulted in impacts on west (southbound) side of I-270 only.
Schifferstadt	F-3-47	Listed	C	1.5 acres	Public	0.09 acre	Expansion of US 15 from two to three lanes plus auxiliary lane in each direction	Grass and hedge-row	Retaining wall within drainage easement	0.67 acre	n/a	HWY-13	Noise and visual	37 ft wide drainage and sewer easement adjacent to US 15 MHT holds a preservation easement on Schifferstadt.
Rose Hill Manor	F-3-126	Listed	B, C	30 acres	Public	0.19 acre	Expansion of US 15 from two to three lanes plus auxiliary lane in each direction	Grassland and wooded hedgerow	n/a	0.58 acre	0.01 acre	HWY-14	Noise and visual	NR boundary established in April, 1971 is not coincident with boundary of Rose Hill Manor Historic Park and predates US 15 construction.
Birely-Roelkey Farm	F-3-134	Eligible	A, C	110.3 acres	Private	13.42 acres	Construction of interchange at US 15 and Biggs Ford Road	Farm field	Design Modification	14.71 acres	12.01 acres	HWY-15	Noise and visual	Design modification would impact farm fields, four businesses and one residence

Notes: <sup>1</sup>Maryland Inventory of Historic Properties Number

<sup>2</sup>Criteria for eligibility include: Criterion A for association with the agrarian past; Criterion B for association with important people or events; and Criterion C for architectural style or association with an historically important architect.

<sup>3</sup>Ownership does not affect Section 4(f) status or consideration.

<sup>4</sup>The highway design includes the use of steeper 2:1 slopes at all historic resource locations (rather than conventional 6:1 slopes) to minimize impacts. The transitway design includes a minimized cross section and retaining walls in appropriate locations to minimize impacts.

<sup>5</sup>Installation of retaining walls may impact the visual and aesthetic character of historic properties and may not be suitable for minimization.

<sup>6</sup>This column shows the impact that would have occurred using the conventional 6:1 slope design and identifies minimization efforts already included in the current design.

<sup>7</sup>Consultation with the National Park Service has indicated that a retaining wall may not be compatible with the historic landscape and viewshed in some locations.

Additional information regarding effects to historic resources may be found in **Chapter IV, Sections D and J**.

MD SHPO has concurred that 10 historic sites are within the area of potential effects for Alternatives 6A/B and 7A/B. Of these, seven sites would require the acquisition of property. The MD SHPO has concurred that the project will have an adverse effect on these seven properties, listed in **Table IV-19** and shown on **Figure IV-9**. The table includes information about each of the resources' NHRP status, size, and the nature of the potential impacts. Each potentially impacted historic resource is also shown on the **Plan Sheets** in **Appendix A**.

England/Crown Farm (M:20-17) is located within the Gaithersburg City limits and is eligible for listing in the NRHP under Criterion A for its association with the agrarian history of Montgomery County (**Sheet TRAN-2, Appendix A**). The dwelling is part of a well-preserved early to mid-twentieth century farm complex originating with the England family in the late nineteenth century. It exhibits architectural significance because of its detailing, and the presence of a log dwelling, possibly originating as a tenant house during the ownership by the Hunter family predating the England family ownership. The property is in the early stages of subdivision. The England/Crown farm has been identified as a rare link to the agrarian past of the Gaithersburg area, which is increasingly overrun by subdivision construction. The MD SHPO concurs that the project will have an adverse effect on this resource.



England/Crown Farm



Belward Farm

Belward Farm (M:20-21), located on the north side of MD 28 west of Key West Avenue in the vicinity of Gaithersburg, is eligible for the NRHP (**Sheet TRAN-3, Appendix A**). It is significant under Criterion A for its strong association with the agrarian history of Montgomery County. The historic site is a remnant of a dairy farm, continuously operated by members of the same family who established it in the mid-nineteenth century. The farmhouse is an excellent example of an 1890s Victorian frame dwelling. Since early 1998, a portion of the historic site located east of the farmstead building cluster has undergone office park/research development near the Great Seneca Highway/Key West Avenue intersection. The MD SHPO concurs that the project will have an adverse effect on this resource.

The Atomic Energy Commission (AEC) Building (M:19-41; Department of Energy) site is located in Montgomery County, southwest of the I-270/MD 118 interchange (**Sheets HWY-3 and TRAN-5, Appendix A**). The building served as AEC headquarters from 1957 to 1975. Between 1946 and 1975, the AEC, an independent federal commission overseeing nuclear sciences, conducted research and development programs or regulated the research of nuclear weapons, propulsion reactors, and technology for scientific, medical and industrial purposes. The building is eligible for the NRHP under Criterion A for its association with the development of new nuclear sciences and as the first post-World War II government agency to be located outside of Washington, DC. The building

is also eligible under Criterion C for its design by prominent architects Vorhees, Walker, Smith & Smith, exemplifying the well-planned office and laboratory buildings for which the firm was known. The AEC Building also meets Criterion Consideration G, as a building of extraordinary significance for the activities that occurred there, such as oversight of the planning and construction of over one hundred nuclear power plants in the United States. The MD SHPO concurs that the project will have an adverse effect on this resource.



Atomic Energy Commission Building

Monocacy National Battlefield NHL (F-3-42) is located south of the City of Frederick (**Sheets HWY-9, HWY-10 and HWY-11, Appendix A**) (see previous description in this Section). The park boundary is not coincident with the NHL boundary. The battlefield retains much of the rural character of the mid-nineteenth century when it gained significance under Criterion A as the location of an important Civil War battle and as a rural historic landscape. Within the pastoral landscape of this portion of the Monocacy River valley roads, railroad and river come together. It was the site of a July 9, 1864 engagement of Union and Confederate forces that bought the time necessary for the Union army to successfully fortify Washington, DC against Confederate capture. The MD SHPO concurs that the project will have an adverse effect on this resource.



Monocacy National Battlefield

Schifferstadt (F-3-47) is located in Baker Park in the City of Frederick (**Sheet HWY-13, Appendix A**) and is listed in the NRHP under Criterion C because it embodies the distinctive characteristics of German building traditions transported to Maryland. The MHT holds a historic preservation easement on Schifferstadt which is coterminous with the historic boundary. This large stone house is outstanding architecturally as an exceptionally well-preserved example of a vernacular building tradition, providing a palpable link to the traditions and patterns of early German settlement in this region. The grounds of Schifferstadt are well groomed, with mature trees adjacent to existing roadways. The MD SHPO concurs that the project will have an adverse effect on this resource.



Schifferstadt





Rose Hill Manor

Rose Hill Manor (F-3-126), located in the City of Frederick, is listed in the NRHP (**Sheet HWY-13, Appendix A**). This large, imposing, porticoed country mansion built near the turn of the nineteenth century is significant architecturally under Criterion C for its late Georgian-Greek Revival transitional style. It is also significant under Criterion B as the home of Maryland's first elected governor, Thomas Johnson. The MD SHPO concurs that the project will have an adverse effect on this resource.

Birely-Roelkey Farmstead (F-3-134), eligible for listing in the NRHP, is located in the southeast corner of the US 15/Biggs Ford Road intersection (**Sheet HWY-15, Appendix A**). It was built about 1851 by John W. Birely, a prominent local businessman and cashier

of the Farmers and Mechanics National Bank in the late nineteenth century. The property constitutes an important link to the agrarian tradition of Frederick County and is eligible under Criterion A for its association with the broad patterns of American history. Most of the contributing outbuildings date from the periods of the Birely and Roelkey ownerships. It is also significant under Criterion C for the buildings, for the architectural style of the main dwelling and an increasingly rare type of agricultural outbuilding, the blacksmith shop. The MD SHPO concurs that the project will have an adverse effect on this resource.



Birely-Roelkey Farmstead

Section 4(f) Uses

Alternatives 6A/B and 7A/B would require the use of property from 13 parks/recreation areas and from seven historic properties. Right-of-way from each resource would be required for the construction of additional

lanes, ramps and intersections along the I-270/US 15 corridor. Most of these impacts would require the acquisition of a strip of land adjacent to the highway from the Section 4(f) resource. The uses and impacts are shown on **Table IV-18** and **Table IV-19**. Several of the engineering elements to minimize harm are also identified in the tables.

Avoidance Analysis

The No-Build Alternative (Alternative 1) and the TSM/TDM Alternative 2 completely avoid impacts to the potentially impacted resources, but they are not feasible and prudent because they do not meet the project purpose and need. Complete avoidance of all Section 4(f) properties would neither be prudent nor feasible, because it would require identifying a new alignment location to the east or west to provide additional capacity or upgrading an existing alternate route, such as MD 355. Avoidance options that would completely avoid large parklands would likely impact other historic resources and would cause other severe problems of a magnitude that substantially outweigh the importance of protecting the Section 4(f) properties.

Least Overall Harm Analysis

SHA and MTA intend to pursue a *de minimis* finding for the following resources: Malcolm King Park, Morris Park, Seneca Creek State Park, Middlebrook Hill Neighborhood Conservation Area, North Germantown Greenway, Black Hill Regional Park, Little Bennett Regional Park, Urbana Lake Fish Management Area, and Urbana Community Park. The final Section 4(f) Evaluation will include the analysis of the alternatives included in the 2002 DEIS and those included in the 2009 AA/EA.

Avoidance options were evaluated for each individual resource, including highway engineering designs with steeper side slopes, retaining walls, narrowed shoulders, and shifting the roadway centerline. For the CCT, the typical section has been narrowed to the minimum width, and steeper side slopes and retaining walls have been incorporated in sensitive areas. By incorporating

a retaining wall in the design, the project would avoid the use of property from Malcolm King Park, Morris Park, and Schifferstadt. A centerline shift could be incorporated into the design to avoid the use of property from Little Bennett Regional Park and the Urbana Lake Fish Management Area. Other design modifications could be employed to avoid the use of property from Belward Farm (adjusting the footprint of the parking facility and/or realigning the hiker-biker trail) and the Birely-Roelkey Farm (shifting the interchange ramps to the northeast quadrant).

For several resources, no prudent and feasible avoidance options were identified. For Seneca Creek State Park, Black Hill Regional Park and Monocacy National Battlefield, the existing parklands are located on both sides of the existing roadway. No feasible and prudent avoidance is possible when widening the existing roadway within the park boundaries. Although a roadway centerline shift could eliminate impacts to Middlebrook Hill Park and North Germantown Greenway, it would increase impacts to Seneca Creek State Park and Black Hill Regional Park, respectively. Eliminating highway impacts by shifting the centerline adjacent to Urbana Elementary School Recreation Area, the Atomic Energy Commission Building, Baker Park, Rose Hill Manor and Rose Hill Manor Park would require reconfiguration of nearby interchanges and incur extraordinary costs and impact additional resources.

The impacts to Urbana Community Park could possibly be avoided during further engineering studies; otherwise, an alignment shift to the west would further impact homes along Fingerboard Road (including potential displacements) and is not considered prudent. Impacts to Schifferstadt could be avoided by construction of a retaining wall within the sewer and drainage easement if that decision is agreed upon during consultation with the owner of the resource.

Avoiding impacts to the England/Crown Farm would require realignment of the transitway along Omega Drive, Key West Avenue and Diamondback Road, impacting the parking facilities (eliminating spaces and impeding access) for buildings in the Decoverly Hall



Office Park. A transitway avoidance of the Atomic Energy Commission Building would also require realignment along public streets that could impact between 30 and 60 homes (relocations and partial acquisitions). These options are not considered prudent because of social impacts and costs. The relocation of the Biggs Ford Road interchange to the north is also not considered prudent as it would require relocation of four businesses and one residence located there.

Measures to minimize harm were considered for each individual resource where avoidance was not deemed feasible or prudent. Options would be determined in continued consultation with the owners of each resource. Engineering options considered for avoidance would also serve to minimize harm to individual resources.

The same engineering options were employed to minimize the use of property from each Section 4(f) resource, including reducing the side slopes from the usual 6:1 design to a 2:1 design, designing retaining walls, and other modifications. Constructing a retaining wall would substantially reduce the impacts at Seneca Creek State Park, Middlebrook Hill NCA, North Germantown Greenway, Black Hill Regional Park, Urbana Elementary School, Urbana Community Park, Monocacy National Battlefield, Baker Park, and Rose Hill Manor Historic Park.

Likewise, the use of retaining walls would reduce impacts to historic properties, such as Monocacy National Battlefield, Schifferstadt, and the Birely-Roelkey Farm; however, retaining walls are not always compatible with the historic landscape or viewsheds of historic properties. Consultation with the National Park Service (NPS) has indicated that retaining walls might be inappropriate in some locations. Consultation with the owners of Rose Hill Manor and Schifferstadt has led to the consideration of retaining walls.

A summary of the results of the application of each of the engineering avoidance and minimization options is included in **Table IV-18** and **Table IV-19**. **Table IV-20** provides a preliminary comparison of all of the build alternatives, based upon preliminary engineering with 2:1 slopes and minimal clearances between LRT and BRT elements.

Table IV-20: Comparison of All Build Alternatives

ALTERNATIVE	SECTION 4(F) RESOURCE AVOIDANCE	MEETS PURPOSE AND NEED	WETLAND IMPACTS	STREAM IMPACTS <sup>1</sup>	FLOODPLAIN IMPACTS	FARMLAND SOILS IMPACTS	FOREST IMPACTS	PROPERTY IMPACTS <sup>2</sup>	HISTORIC PROPERTIES ADVERSELY EFFECTED <sup>3</sup>	PARKS/ RECREATION AREAS IMPACTS
3A/B	No – Use of parks & historic properties	Yes	Yes – 10.7 acres	Yes – 14,185 lf	Yes – 23 acres	Yes – 651.6 acres	Yes – 183 acres	Yes – 64-127 R; 4-11 B	7 properties	11 parks; 37 acres
4A/B	No – Use of parks & historic properties	Yes	Yes – 10.7 acres	Yes – 14,185 lf	Yes – 23 acres	Yes – 651.6 acres	Yes – 183 acres	Yes – 64-127 R; 4-11 B	7 properties	11 parks; 37 acres
5A/B	No – Use of parks & historic properties	Yes	Yes – 11.6 acres	Yes - 16,331 lf	Yes – 24 acres	Yes – 682.1 acres	Yes – 199 acres	Yes – 64-128 R; 4-12 B	7 properties	12 parks; 44 acres
5C	No – Use of parks & historic properties	Yes	Yes – 10.7 acres	Yes - 13,407 lf	Yes – 21 acres	Yes – 547.3 acres	Yes – 180 acres	Yes – 127-385 R; 2-11 B	5 properties	13 parks; 48 acres
6A/B	No – Use of parks & historic properties	Yes	Yes – 15.6 acres	Yes - 24,204 lf	Yes – 28.4 acres	Yes –1204.2 acres	Yes –296 acres	Yes – 256-260 R; 13-43 B	7 properties; 43.28 acres	13 parks; 43 acres
7A/B	No – Use of parks & historic properties	Yes	Yes – 15.6 acres	Yes - 24,204 lf	Yes – 28.4 acres	Yes –1204.2 acres	Yes – 296 acres	Yes – 256-260 R; 13-43 B	7 properties; 43.28 acres	13 parks; 43 acres

NOTES: All impacts are based upon engineering designs with 2:1 slopes as shown on the Plan Sheets in the 2002 DEIS and 2009 AA/EA. Impacts do not include the transit O&M facilities, as they do not impact Section 4(f) properties.

<sup>1</sup>Stream impacts do not include ephemeral streams, as these were not identified for the DEIS alternatives. lf = linear feet

<sup>2</sup>Numbers indicate relocations. R = residential; B = business

<sup>3</sup>Number is based upon current evaluation, including newly evaluated resources. See Section D.





Other minimization measures could include:

- Providing replacement land of equal or greater natural resource and economic value as per Program Open Space and Section 6(f) funding requirements.
- Erosion and sediment control measures would be provided and strictly enforced to minimize water quality impacts.
- Use of stormwater management (SWM) Best Management Practices, including the potential use of underground SWM facilities, would be employed to control runoff.
- Impacted wetlands would be replaced.
- Vegetation mitigation, such as removal of non-native plant species and replanting of native plant species to create historic landscape buffer.
- Additional appropriate mitigation measures, such as landscaping with viewshed considerations (where applicable with respect to the resource), will be developed through coordination with the jurisdictional agency.
- Relocation of facilities or installation of new facilities within the resource boundaries, as appropriate, may be developed through coordination with the jurisdictional agency.

**Table IV-21** provides a summary of the preliminary least overall harm analysis. This analysis sets the framework for the presentation and analysis of all of the build alternatives, selection of a Locally Preferred Alternative, and completion of a Tier I Final Environmental Impact Statement and Section 4(f) Analysis that will culminate in a Record of Decision for the project.

Consultation and Coordination

Coordination and consultation has been ongoing with the NPS, MD SHPO, MDNR, M-NCPPC, the Frederick County Landmarks Foundation (FCLF) and Frederick County Department of Parks & Recreation, the Frederick County Historic Preservation Commission, the Frederick City Historic Preservation Commission, the General Services Administration and the private owners of the properties that would be

impacted by the project. Coordination has included requests for information, submittal of cultural resources inventory, park and cultural resource boundaries, and review of the proposed transportation improvements. Coordination will continue with these organizations throughout the NEPA process and through design and construction to further identify options for additional minimization of impacts. Coordination letters are listed in **Appendix D** and included in the *Draft Section 4(f) Evaluation*. Descriptions of coordination meetings are found in **Chapter VII**. The correspondence further chronicles the coordination activities of the Project Team with the Section 4(f) property owners.

The project team has conducted individual coordination with the NPS (Monocacy National Battlefield), MDNR (Seneca Creek State Park), M-NCPPC (Black Hill Regional Park), FCLF (Schifferstadt), GSA/DOE (Atomic Energy Commission Building), Johns Hopkins Real Estate (Belward Farm), Frederick County Division of Parks and Recreation (Rose Hill Manor), Spring Bank, LLC (Spring Bank), and Crown Farm Village (England/Crown Farm) regarding potential impacts to their facilities and to provide an overview of the transportation alternatives and potential impacts under consideration.

**Table IV-22** presents a list of coordination and consultation meetings that have taken place since publication of the 2002 DEIS. A number of these meetings include coordination for both the Section 106 and Section 4(f) process. The following discussion highlights some of the consultation and coordination that has taken place to date.

Team coordination meetings are held on a monthly basis to discuss current topics and to review the project’s progress and issues. Coordination with the NPS has occurred throughout the project as they are represented on the Project Team, both prior to the 2002 DEIS and since. Since 2002, meetings with NPS were held on November 8, 2007, February 15, 2008 and August 21, 2008. Additional meetings with NPS are listed in the table below. In their April 18, 2008 response to SHA’s January 17, 2008 letter inviting the NPS to be a consulting party in the Section 106 process, the NPS indicated potential mitigation should include, among

Table IV-21: Preliminary Least Overall Harm Analysis

23CFR774.3(C)(1) FACTOR	ALT. 1 NO-BUILD	ALT. 2 TSM/TDM	ALTERNATIVES EVALUATED IN THE 2002 DEIS							AA/EA ALTERNATIVES			
			3A	3B	4A	4B	5A	5B	5C	6A	6B	7A	7B
i. The ability to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)	Least able to lower increasing noise impacts due to increasing congestion	Limited ability to lower increasing noise impacts due to increasing congestion	All build alternatives are mostly able to mitigate impacts through engineering minimizations, such as retaining walls and centerline shifts, and other measures, such as providing replacement land, enhancement of buffer areas, elimination of invasive species, re-vegetation of adjacent land. Alternative 5C may be slightly more able as it does not have transitway impacts. Appropriate measures will be considered as consultation with jurisdictional officer (JO) continues.										
ii. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes or features that qualify each Section 4(f) property for protection	Not applicable	Not applicable	Because the locations of each alternative’s impacts are substantially the same (the transitway alignment is identical for build Alternatives 3A/B, 4A/B, 5A/B, 6A/B and 7A/B, and the highway improvements are adjacent to the existing highway), the relative severity of remaining harm is similar for all alternatives except Alternative 5C, which would have less as it does not have transitway impacts.										
iii. The relative significance of each Section 4(f) property	Not applicable	Not applicable	The Monocacy National Battlefield is a National Historic Landmark, and, therefore is deemed more significant than the other resources because of its national significance. Most of the remaining resources have equal significance, and, therefore, the options are substantially equal for this analysis factor.										
iv. The views of the officials with jurisdiction over each Section 4(f) property	Not applicable	Not applicable	SHA and MTA are in continuing consultation with the jurisdictional officers of each resource, addressing issues as they are presented. Some of the views and issues already addressed are presented in the Consultation and Coordination section.										
v. The degree to which each alternative meets the purpose and need for the project	Does not meet purpose and need: continued and increasing congestion	Does not meet purpose and need: continued and increasing congestion	These build alternatives meet the project’s purpose and need.										
vi. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)	Not applicable	Not applicable	Because the locations of each alternative’s impacts are substantially the same (the transitway alignment is identical for build Alternatives 3A/B, 4A/B, 5A/B, 6A/B and 7A/B, and the highway improvements are adjacent to the existing highway), the relative magnitude of adverse impacts to resources not protected by Section 4(f) is similar for all alternatives except Alternative 5C, which would have less as it does not have transitway impacts. Regulated mitigation measures for natural resources will essentially mitigate all impacts to wetlands, streams, and forests. Relocations will be mitigated through the Federal relocation assistance program. Farmland soils impacts will not be mitigated and may be considered moderate.										
vii. Substantial differences in cost among the alternatives*	\$0	\$33	\$2,662	\$2,597	\$2,662	\$2,597	\$2,955	\$2,890	\$2,519	\$4,656	\$4,329	\$4,656	\$4,329

NOTE: Least overall harm analysis is not completed. This analysis sets the framework for the presentation and analysis of all of the build alternatives, selection of a Locally Preferred Alternative, and completion of a Tier 1 Final Environmental Impact Statement and Section 4(f) Analysis that will culminate in a Record of Decision for the project.

\* Capital costs are provided in millions of 2001 dollars for the DEIS alternatives and in millions of 2007 dollars for the AA/EA alternatives.



Table IV-22: Section 106/Section 4(f) Coordination Meetings

MEETINGS BETWEEN NPS AND SHA	MEETINGS BETWEEN M-NCPPC AND MTA	SHA AND/OR MTA MEETINGS WITH OTHER CONSULTING PARTIES		
May 2, 2002	September 12, 2007	July 10, 2007	MTA	Johns Hopkins/Belward Farm
June 17, 2002	May 9, 2008	October 1, 2007	MTA	Johns Hopkins/Belward Farm
July 15, 2002	May 23, 2008	February 9, 2008	MTA	Johns Hopkins/Belward Farm Community Planning Workshop
June 26, 2003	May 30, 2008	July 18, 2008	MTA	Johns Hopkins/Belward Farm
November 8, 2007		April 11, 2008	SHA	FCLF/Schifferstadt
February 15, 2008		July 18, 2008	MTA	England/Crown Farm
July 11, 2008		July 21, 2008	SHA	Spring Bank & Birely-Roelkey Farm
August 21, 2008		July 25, 2008	SHA	Rose Hill Manor
September 24, 2008		September 5, 2008	Noise Committee	Schifferstadt & Rose Hill Manor
		October 2, 2008	SHA/MTA	GSA/DOE (Atomic Energy Commission Building)

other suggestions, replacement lands contiguous to the battlefield, removal of non-native vegetation, and traffic noise reduction efforts. Traffic noise reduction suggestions included using a lower noise road surface, vegetative or hard sound barriers, and lowering speed limits through the battlefield. Viewsheds are also a concern of NPS and will be considered as the NEPA process continues. Coordination with NPS is continuing.

Coordination with MDNR has occurred throughout the project with requests for information and verification of resource boundaries. On July 17, 2001, the Project Team met with MDNR to review the possible impacts to Seneca Creek State Park from the improvements. MDNR indicated that lands needed for the proposed improvements should be replaced on a 1:1 basis and the land should be contiguous to the state park.

Coordination with M-NCPPC has occurred throughout the project as they are represented on the Project Team. Team coordination meetings are held on a monthly basis to discuss current topics and to review the project’s progress and issues. In addition, an individual coordination meeting was held on September 5, 2001 to discuss the potential impacts to Black Hill Regional Park. M-NCPPC indicated they would prefer equal right-of-way impacts to both the east and west sides of I-270 along the park boundary. M-NCPPC also commented that right-of-way mitigation should include replacement lands on a 1:1 basis contiguous to the park.

Coordination regarding impacts to the Schifferstadt museum and grounds has evaluated the issues of property ownership and noise impacts likely indoors.

F. Natural Environment

This section details the existing natural resources in the project study area and identifies the impacts of Alternatives 6A/B and 7A/B on each of these resources. Natural resources evaluated include: topography, geology and soils; groundwater; surface waters and surface water quality, including Scenic and Wild Rivers; floodplains; waters of the US including wetlands; terrestrial vegetation and wildlife, including forests; aquatic habitat and species; and rare, threatened and endangered species. For each resource, existing conditions are updated from the 2002 DEIS where the ETL highway right-of-way or transitway right-of-way extends outside of the DEIS right-of-way, or where new or updated information exists for natural environmental resources. In general, only the updated information is included in this document. The impacts of Alternatives 6A/B and 7A/B on each resource are discussed individually as well as summarized in *Tables IV-23* and *IV-24* that begin the section. A discussion of possible avoidance, minimization and/or mitigation of impacts completes the discussion of each of the natural resources. Further details can be found in the *I-270/US 15 Multi-Modal Corridor Study Natural Environmental Technical Report (NETR)* (June 2007).

Topography, Geology and Soils

Existing Conditions

Topography

The topography of the I-270/US 15 Corridor is characterized by a level floodplain within the Monocacy Valley in the north and rolling terrain in the south. Elevations range from about 240 feet at the Monocacy River rising to 650 feet between Comus Road and MD 121.

Geologic Formations

The project extends from southeast to northwest through much of the Piedmont physiographic province. The western edge of the Piedmont province within the Corridor is comprised of the Frederick Valley, which includes the Monocacy River floodplain. This area is generally underlain by limestone and dolomite, which are not very resistant to erosive forces. The remainder of the I-270/US 15 Corridor is composed of bedrock formed

from metamorphic processes. Metamorphic processes are heat and pressure that cause profound physical and/or chemical change. The segment of the I-270/US 15 Corridor that starts at Shady Grove and cuts through Gaithersburg contains the Sykesville Formation, Morgan Run Formation, and Conowingo Diamictite Formation. Moving northwest along the I-270/US 15 Corridor to the edge of the Monocacy River, seven geologic formations occur from oldest to youngest: Marburg Formation, Cash Smith Formation, Araby Formation, Ijamsville Formation, Urbana Formation, Gillis Formation, and Sams Creek Formation. Grove and Frederick Limestone underlie the last section of the Corridor, which crosses the Monocacy River and connects with US 15.

Soils

General Characteristics

A soil association is a landscape that has a distinctive proportional pattern of soils and normally consists of one or more major soils and at least one minor soil. The segment of the I-270/US 15 Corridor that starts at Shady Grove and cuts through Gaithersburg contains the Sykesville Formation, Morgan Run Formation, and Conowingo Diamictite.

The soil associations mapped for Frederick County have been renamed since the 2002 DEIS. The renamed soil associations, from south to north, in Frederick County include Mt. Airy-Glenelg-Blocktown, Linganore-Hyattstown-Conestoga, Bagtown-Stumptown-Edgemont, Codorus-Hatboro-Combs, Myersville-Catoctin-Mt. Zion, Cardiff-Whiteford, Penn-Klinesville-Reaville, Rowland-Bermudian-Bowmansville, and Duffield-Hagerstown-Ryder. Details on each soil association and their characteristics are located in the NETR .

Prime Farmland Soils and Soils of Statewide Importance

Prime farmland soils and soils of statewide importance have been identified using soil classifications from the Montgomery County and Frederick County Soil Surveys. *Figure IV-10 (Sheets 1 through 5)* shows a map of the prime farmland soils and soils of statewide importance within the highway and transitway portions of the project study area.



Table IV-23: Summary of Natural Resource Impacts of Alternatives 6A/B and 7A/B

RESOURCE		ALTERNATIVE 6A/B <sup>1</sup>	ALTERNATIVE 7A/B <sup>1</sup>
<b>Natural Environment</b>			
Prime Farmland Soils	Highway component Transitway component	642 acres 100.6 acres	642 acres 100.6 acres
Soils of Statewide Importance	Highway component Transitway component	460 acres 28.7 acres	460 acres 28.7 acres
Number of Active Farms (Acres of Farmland from Active Farms)		38 191 acres	38 191 acres
<b>Floodplains – Total</b>		<b>28.4 acres</b>	<b>28.4 acres</b>
	Highway component Transitway component	25.6 acres 2.8 acres	25.6 acres 2.8 acres
<b>Forest – Total</b>		<b>295.8 acres</b>	<b>295.8 acres</b>
	Highway component Transitway component	268.6 acres 27.2 acres	268.6 acres 27.2 acres
Rare, Threatened and Endangered Species		Potential <sup>2</sup>	Potential <sup>2</sup>
<b>Waters of the US – Total Streams</b> <b>Waters of the US – Total Wetlands</b>		<b>24,204 linear feet<sup>5</sup></b> <b>15.6 acres wetlands<sup>5</sup></b>	<b>24,204 linear feet<sup>5</sup></b> <b>15.6 acres wetlands<sup>5</sup></b>
Highway Component			
Streams		20,198 linear feet	20,198 linear feet
Ephemeral channels <sup>3</sup>		10,812 linear feet	10,812 linear feet
Wetlands		13 acres	13 acres
Transitway Component			
Streams		4,006 linear feet	4,006 linear feet
Ephemeral channels <sup>3</sup>		1,646 linear feet	1,646 linear feet
Wetlands		2.6 acres <sup>4</sup>	2.6 acres <sup>4</sup>

<sup>1</sup>Alternatives 6 and 7 have identical highway footprint.

<sup>2</sup>Potential direct and indirect impacts to two fish species: pearl dace and comely shiner.

<sup>3</sup>Since 2002, the US Army Corps of Engineers (USACE) has broadened the definition of waters of the US to include ephemeral streams (channels). Ephemeral streams were not considered in the DEIS.

<sup>4</sup>Values for transitway areas include all of the impacts from all potential O&M facilities sites; actual impact is lower as only one of the sites would be constructed.

<sup>5</sup>Does not include ephemeral streams.

Table IV-24: Summary of Natural Resource Impacts of the Potential O&M Sites

RESOURCE	PRIME FARMLAND SOILS, ACRES	SOILS OF STATEWIDE IMPORTANCE, ACRES	FLOODPLAINS, ACRES	WETLANDS, ACRES	STREAMS, LINEAR FEET	FOREST, ACRES
Redland Road LRT	7.4	7.4	0	0	0	0
Redland Road BRT	5.89	0.0	0	0	0	0
Crabbs Branch Way BRT	8.23	0.72	0	0	0	0
PEPCO LRT	2.68	12.03	0	0	660	18.7
Police Vehicle Impound Lot LRT	12.48	1.92	0	0	486	10.2
Police Vehicle Impound Lot BRT	12.48	0.55	0	0	486	10.2
Observation Drive BRT	6.29	5.74	0	0	0	0.8

NOTE: Only one site will be chosen for an O&M Site. Any of the appropriate O&M sites (LRT sites for alternatives ‘A’ and BRT sites for alternatives ‘B’) could be constructed with any of the build alternatives (3A/B, 4A/B, 5A/B, 6A/B, or 7A/B).

Table IV-25: Comparison of Farmland Soils Impacts

FARMLAND SOILS	FARMLAND SOILS IMPACTS (ACRES) BY ALTERNATIVE		
	ALTERNATIVE 1 NO-BUILD	ALTERNATIVE 6A/B*	ALTERNATIVE 7A/B*
Prime Farmland Soils	0	742.6	742.6
Soils of Statewide Importance	0	488.7	488.7
<b>Total Farmland Soils Impacted</b>	<b>0</b>	<b>1,231.3</b>	<b>1,231.3</b>

\*Soils located under I-270, US 15 and other developed areas are included in the total for Alternatives 6A/B and 7A/B, but were not included for Alternatives 3A/B, 4A/B and 5A/B/C in the 2002 DEIS.

Prime farmland soils for the Montgomery County and Frederick County portions of the project area are the same as reported in the 2002 DEIS (Section III.E.2.a, page III-126) with two notable additions within the Montgomery County portion of the CCT alignment. These two newly added soils include Glenelg silt loam, 3 to 8 percent slopes (2A) and Occoquan loam, 3 to 8 percent slopes (17B). The soils of statewide importance for Montgomery County are also reflected in the 2002 DEIS (Section III.E.2.b, page III-128). The Frederick County soils of statewide importance, which were not available at the time of the 2002 DEIS, have been obtained from the Frederick County Soil Conservation District.

Prime farmland soils mapped within the I-270/US 15 Corridor include the following soil series: Adamstown, Bermudian, Buckeystown, Duffield, Glenelg, Glenville, Hagerstown, Legore, Lindside, Myersville, Springwood, Elioak, Neshaminy, Gaila, and Occoquan. Soils of statewide importance within the Corridor include the following series: Brinklow-Blocktown, Gaila, Glenelg, Linganore-Hyattstown, Occoquan, Bermudian, and Hagerstown.

Impacts

Topography

The topography of the I-270/US 15 Corridor will not be affected by Alternative 1 (No-Build Alternative). Topography within the project corridor will be affected by the build alternatives. The highway components

of Alternatives 6A/6B and 7A/7B will require grading of existing land surface and the placement of fill in various locations for ramps, bridge approaches and extensions, and other new roadway components. The transit component of the build alternatives will traverse a less manipulated landscape than that of the highway component, resulting in a greater impact to topography. A more detailed discussion of impacts to topography is discussed in the 2007 NETR.

Geology

The geology of the I-270/US 15 Corridor will not be affected by Alternative 1 (No-Build Alternative) or the highway or transitway components of Alternatives 6A/B and 7A/B.

Soils

Alternative 1, the No-Build Alternative, would not impact soils in the project study area. Alternatives 6A/B and 7A/B will have the same prime farmland and statewide important soils impact, as both alternatives are on the same physical footprint (**Table IV-25**). The highway component of the alternatives will impact approximately 642 acres of prime farmland soils and 460 acres of soils of statewide importance. The transitway component of the alternatives will impact 78.7 acres of prime farmland soils and 23.5 acres of soils of statewide importance. Impacts from the O&M facilities sites currently under consideration are identified separately (**Table IV-24**), because the location of a preferred site has not been determined.



Figure IV-10: Prime Farmland Soils and Soils of Statewide Importance

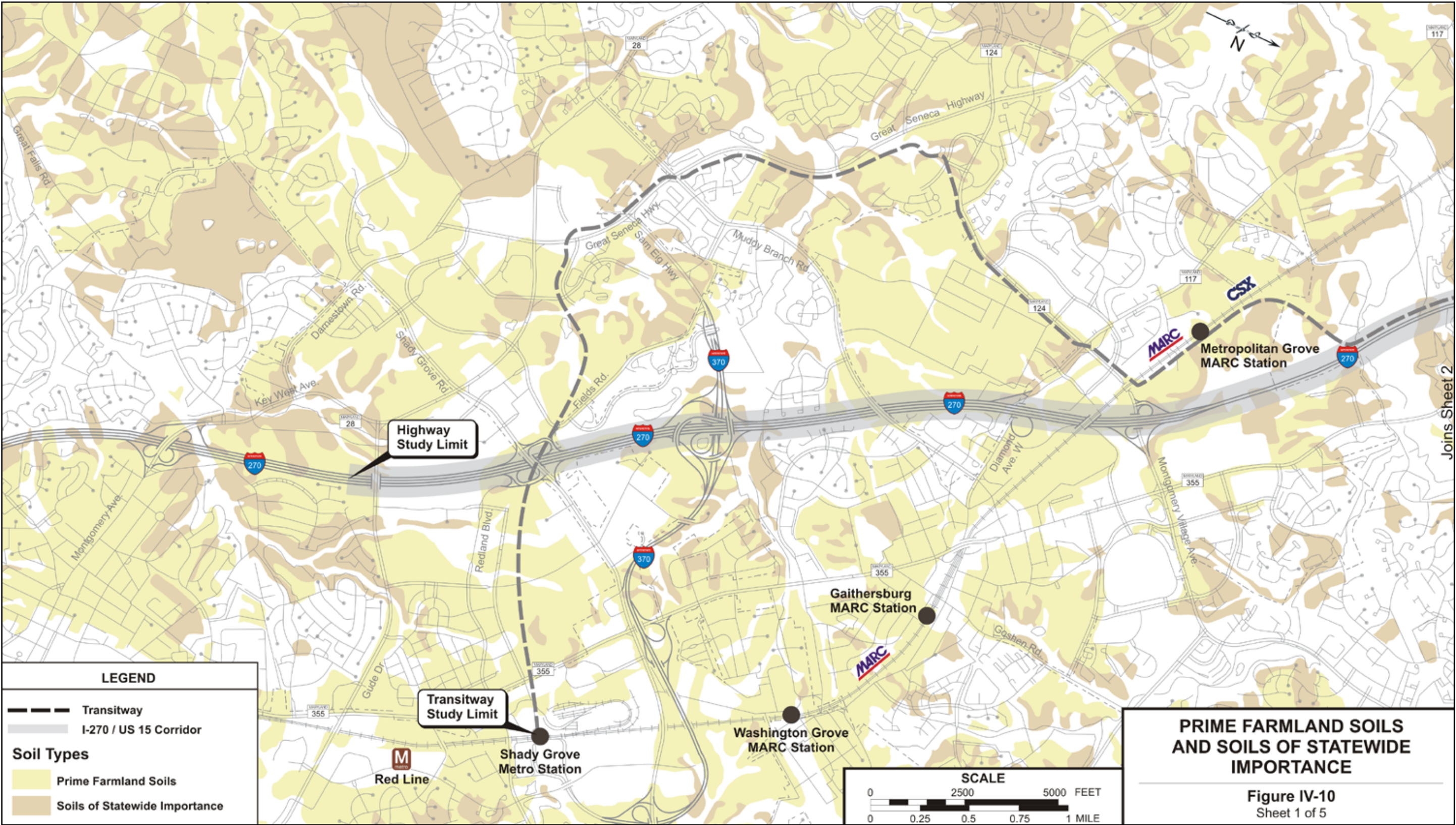




Figure IV-10: Prime Farmland Soils and Soils of Statewide Importance

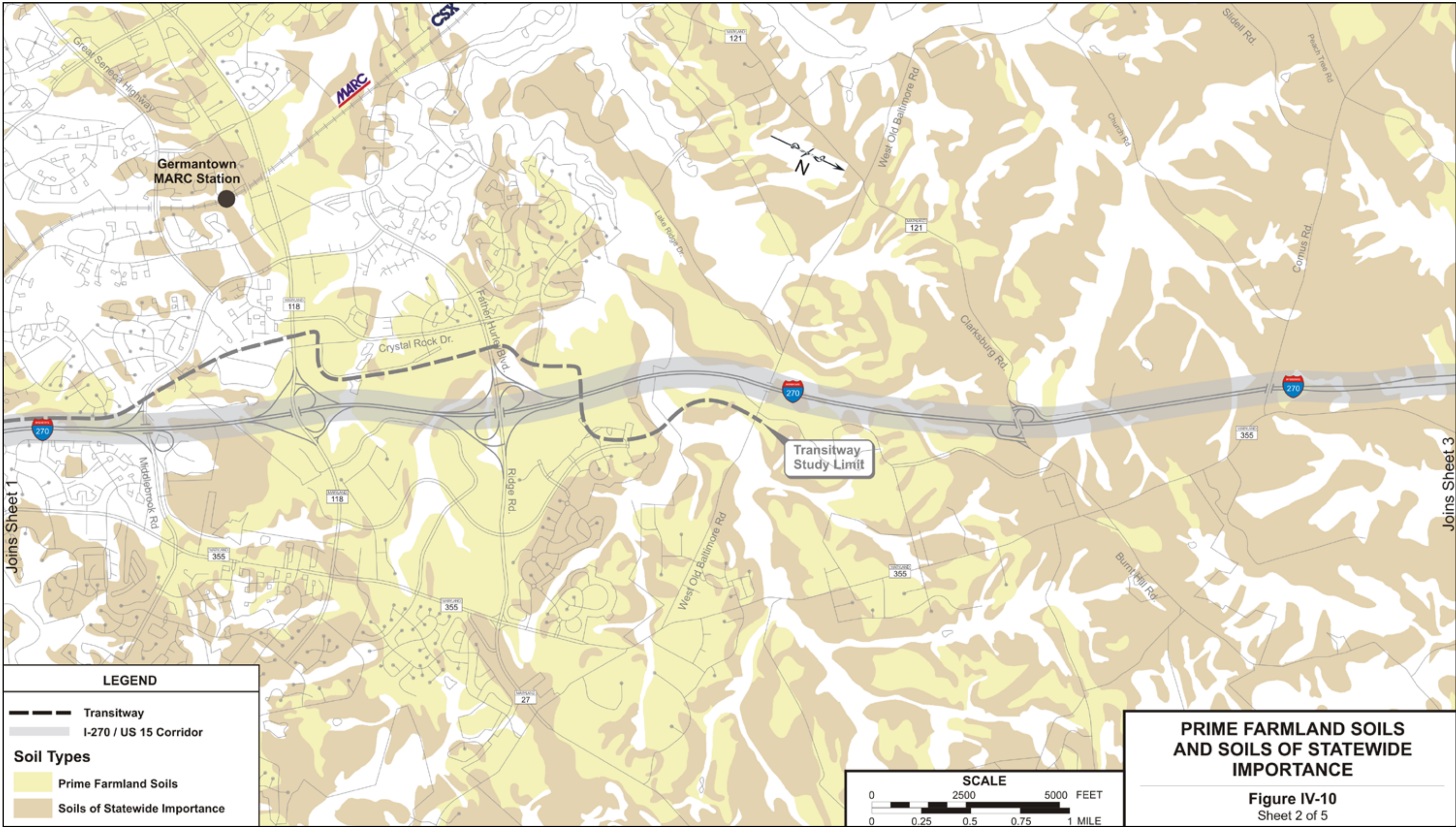




Figure IV-10: Prime Farmland Soils and Soils of Statewide Importance

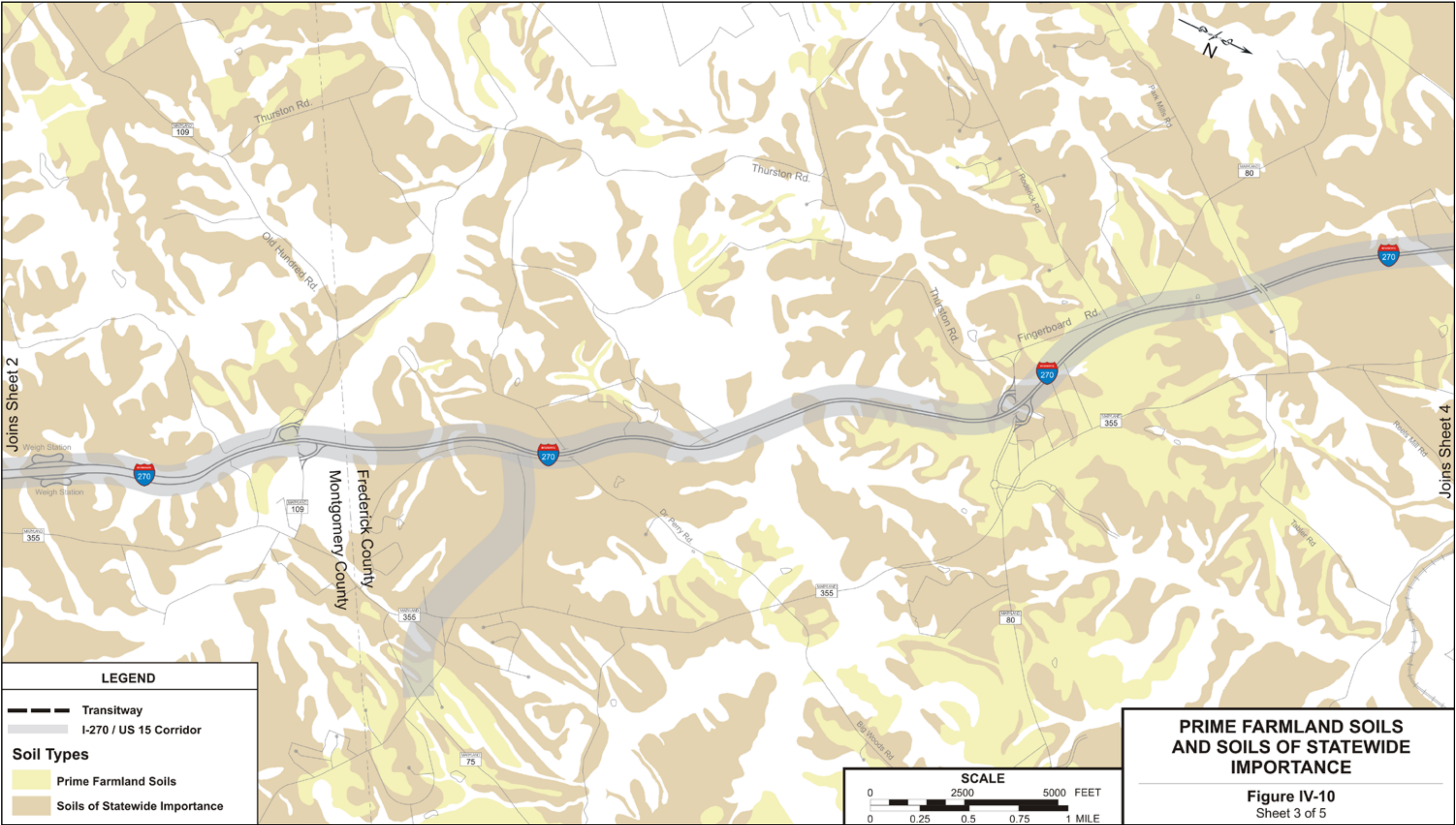




Figure IV-10: Prime Farmland Soils and Soils of Statewide Importance

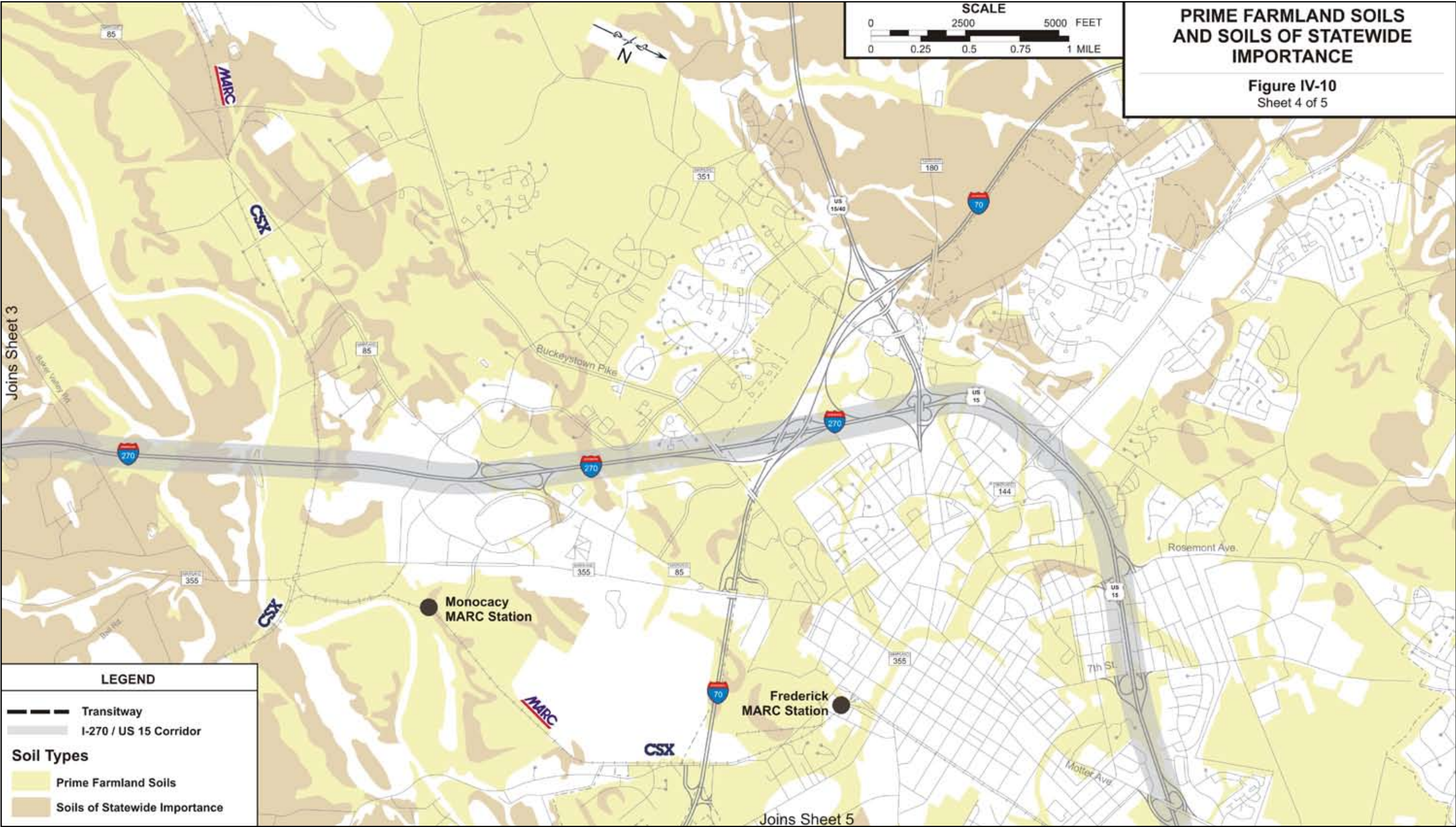
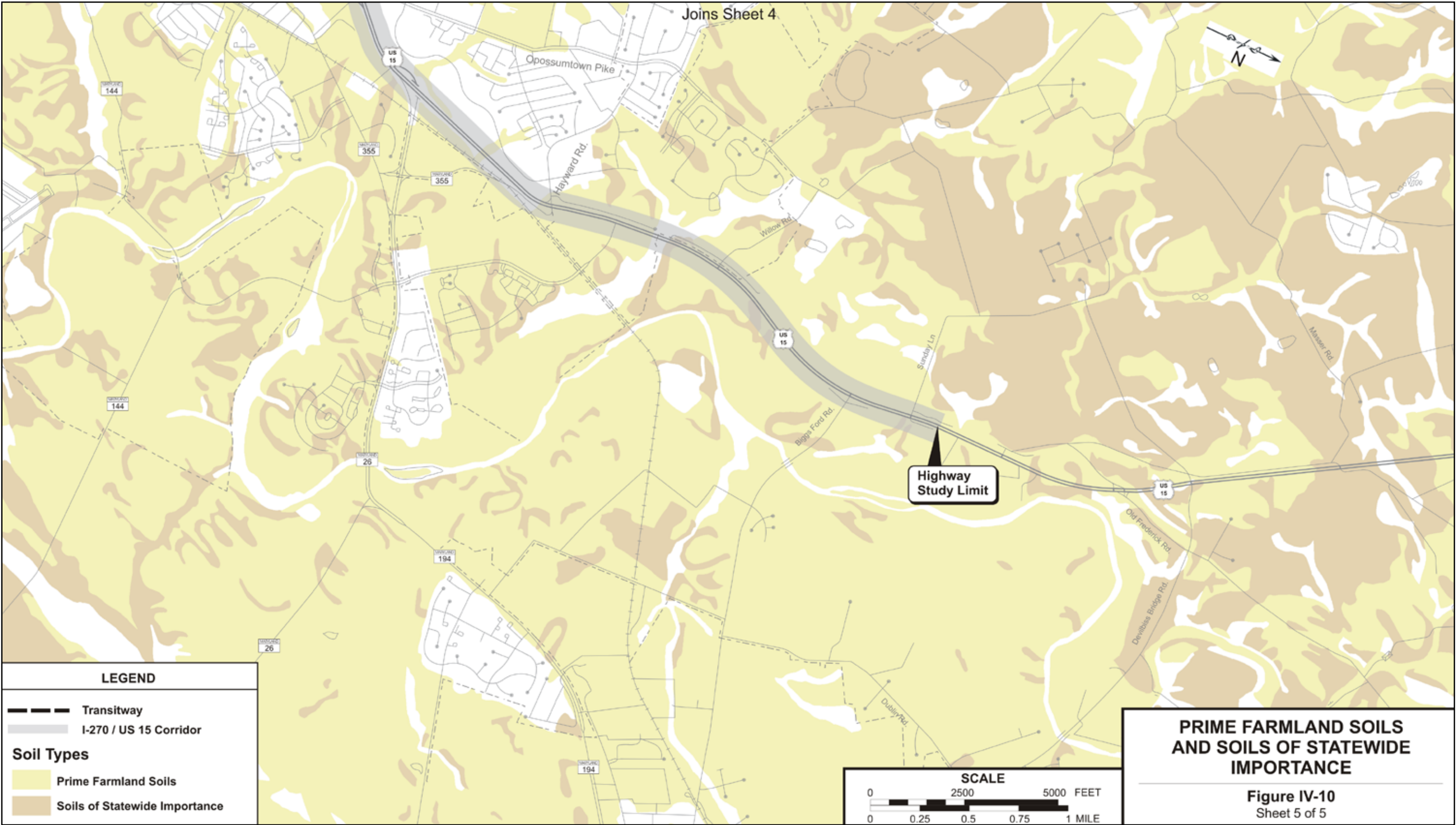




Figure IV-10: Prime Farmland Soils and Soils of Statewide Importance





### Avoidance, Minimization and Mitigation

Proper slope and soil stabilization techniques will be used in work areas, both during and after construction, to prevent sedimentation of nearby waterways. Sediment and erosion controls and SWM facilities will be implemented in the project area in accordance with the Maryland Department of Environment (MDE) *2000 Maryland Stormwater Design Manual, Volumes I & II*.

With respect to prime farmland soils and soils of statewide importance, the long, linear nature of the proposed highway and transitway components of both alternatives and extensive coverage of the study area by these soils, make complete avoidance impossible. The impacts associated with the build alternatives are not anticipated to interrupt viable farm operations or jeopardize the financial stability of these businesses. It should be noted that master plan documents for Montgomery and Frederick counties show that many areas presently in agricultural use are zoned for development.

## Groundwater

### Existing Conditions

The principle aquifers found within the project area are shown on Figure 8 of the 2007 NETR. Three principal types of bedrock aquifers underlie the Piedmont province: crystalline rock, aquifers in early Mesozoic basin, and carbonate-rock aquifers.

The boundaries of the Maryland Piedmont Sole Source Aquifer (SSA) have been extended by the US Environmental Protection Agency (EPA) since the 2002 DEIS. The extended area includes a portion of the Piedmont aquifer system, designated as the Poolesville Area Aquifer System that underlies Poolesville and the surrounding area in lower western Montgomery County, and is shown on Figure 9 of the 2007 NETR.

### Impacts and Avoidance/Minimization Efforts

Alternative 1 (No-Build Alternative) will not have an impact on groundwater within the project corridor. Proposed highway improvements included in the build alternatives will occur at-grade with the existing I-270/US 15 roadway, reducing the depth of excavation needed to construct these road improvements and preventing any alteration of groundwater flow within

the corridor. However, potential sources of groundwater contamination from highway deicing, urban runoff, and fuel tank leakages may seep into groundwater supplies as the movement of water between surface water and groundwater provides a major pathway for chemical transfer between the terrestrial and aquatic systems.

The transitway components of the build alternatives will require a greater depth of excavation as they cross a less manipulated terrain. Several tributaries to Great Seneca Creek may be affected due the increase of impervious surfaces from construction of the transitway. The impervious surfaces reduce or redirect the amount of water from entering the aquifers, ultimately reducing the available groundwater in these areas.

All build alternatives for both the highway and transitway alignments will traverse the Piedmont SSA within the Little Seneca Creek, Little Bennett Creek and Bennett Creek basins. Indirect impacts to the aquifer may occur as highway constituents, such as those described above, enter groundwater supplies during storm events. However, the use of Best Management Practices (BMPs) for SWM facilities will decrease the amount of constituents that reach the aquifer and diminish the contamination to a level that does not pose a public health hazard.

## Surface Waters

As identified in the 2002 DEIS, the I-270/US 15 Corridor traverses the Washington Metropolitan and Middle Potomac River sub-basins. There are 13 major surface water bodies along the I-270/US 15 Corridor, which are shown on *Plan Sheets* in **Appendix A**.

### Major Streams/Hydrology

#### Existing Conditions

Several major surface water bodies are located along the I-270/US 15 Corridor. The major streams within Montgomery County include Mill Creek, Gunners Branch, Muddy Branch, Great Seneca Creek, Little Seneca Creek, unnamed tributary to Ten Mile Creek, Wildcat Branch, and Little Bennett Creek. The remaining streams are located within Frederick County and include Bennett Creek, Urbana Branch, Monocacy River, Quarry Branch, Arundel Branch, Rock Creek, Carroll Creek, unnamed tributary of the Monocacy

River, Tuscarora Creek, and Muddy Run. The proposed transitway alignment occurs completely within Montgomery County and crosses four of the same streams as the highway alignment. These streams are Muddy Branch, Great Seneca Creek, Gunners Branch, and Little Seneca Creek.

### Impacts

Alternative 1 (No-Build Alternative) will not have an impact on major stream systems within the project corridor. Alternatives 6A/B and 7A/B will have the same impacts to the major stream systems within the project study area, as both alternatives have the same physical footprint. The direct impact to streams is greater for Alternatives 6A/B and 7A/B when compared to the alternatives assessed in the 2002 DEIS, as the footprint to accommodate Alternatives 6A/B and 7A/B is greater.

### Highway Impacts

There will be 20,198 linear feet of impacts to riverine systems within the highway alignment. These alignments impact a total of 77 streams and tributaries of various sizes (refer to the 2007 NETR for the full list of streams and tributaries). The major streams impacted are: Muddy Branch, Great Seneca Creek, Little Bennett Creek, Bennett Creek, Monocacy River, Muddy Run, Rock Creek (tributary of Monocacy River), Mill Creek, Carroll Creek, Tuscarora Creek, Ballenger Creek, and Little Seneca Creek. Direct impacts to stream channels, are associated with culvert or bridge extensions in portions of the stream already disturbed by the existing crossing.

### Transitway Impacts

Within the transitway alignment, 4,006 linear feet of stream impact would occur from the alignment and transit stations. Potential O&M facilities at the Police Impound Lot site or PEPCO site would impact an additional 486 linear feet or 660 linear feet, respectively, if constructed. A more detailed discussion of impacts to streams for the highway and transitway components is located in the 2007 NETR.

### Avoidance, Minimization and Mitigation

Complete avoidance of impacts to surface waters is not possible due to the number of these systems in the project area and their orientation perpendicular



Monocacy River

to the proposed alternatives. However, impacts have been avoided or minimized wherever possible through the realignment of the transitway and the shift of lane additions to one side of the existing highway or another. Investigations of further avoidance and minimization measures are ongoing and will continue throughout all phases of engineering design for the project.

Direct impacts to stream channels will require a Section 404 permit from the US Army Corps of Engineers (USACE) and a waterway construction permit from MDE. Mitigation for stream channel impacts will require a one to one replacement ratio as discussed in the 2002 NETR.

## Surface Water Quality

### Existing Conditions

The Code of Maryland Regulations (COMAR) sets forth water quality criteria specific to designated uses [Title 26, §08.02.02 and §08.02.08 (2006)]. All stream segments within the project area are designated as Use Class I-P (water contact recreation and the protections of aquatic life and public water supplies), Use Class III-P (natural trout waters and the protection of public water supplies), or Use Class IV-P (recreational trout waters and the protection of public water supplies). Table 7 of the 2007 NETR details the water quality parameters associated with each stream class designation.



Based on available water quality data, the streams located within the project study area were all within Maryland state standards for temperature. Several pH readings within Little Bennett Creek, Little Seneca Creek, Muddy Branch, and Mill Creek were slightly more acidic than the 6.5 Maryland standard. The average pH for all these watersheds was well within the acceptable range. Average dissolved oxygen values for Tuscarora Creek, within the project study area, were well above the standard. Conductivity values within the project study area ranged from 0.144 mS/cm to 0.550 mS/cm. The higher conductivity values were generally found in more impervious, urbanized watersheds.

Impacts

The No-Build Alternative will have no effect on the surface water quality of the study area watersheds. Both Alternatives 6A/B and 7A/B have the potential to affect the surface water quality in the project area. Direct impacts to streams include sediment releases and vegetation removal. Sediment releases can damage fish and macroinvertebrate habitat or cause fish mortality. Tree removal reduces shade to the stream causing in-stream temperatures to rise, which can affect sensitive fish species, such as trout, that have cooler temperature requirements.

Avoidance, Minimization and Mitigation

Total avoidance of impacts to surface water quality cannot be avoided because of the large area of watershed affected by the project and the numerous stream systems that cross the project corridor. However, effects can be minimized and mitigated with the construction of stormwater management (SWM) facilities to handle increased stormwater runoff that may occur with the construction of additional highway surfaces. During construction activities, the use of sediment and erosion control measures will be employed to prevent surface water contamination.

Scenic and Wild Rivers

The Monocacy River, which flows perpendicular to the I-270/US 15 Corridor south of Frederick in Frederick County, is designated as a State Scenic River based on the criteria established within the Scenic and Wild Rivers Act of 1968. The Monocacy River is identified on the *Plan Sheets* provided in **Appendix A**.

Alternatives 6A/B and 7A/B will directly impact the Monocacy River (approximately 75 linear feet by 8 feet wide) for a new bridge pier to accommodate the roadway widening.

Prior to the implementation of either build alternative, project plans would be provided to MDNR for review in compliance with the Maryland Scenic and Wild Rivers Act. The MDNR will review how these direct impacts diminish the character of the Monocacy River. Coordination with MDNR regarding potential impacts to the Monocacy River is ongoing and will continue through all phases of the project.

Floodplains

Existing Conditions

US Department of Transportation Order 5650.2 entitled *Floodplain Management and Protection* prescribes policies and procedures for ensuring that proper consideration is given to the avoidance and mitigation of floodplain impacts. The Federal Emergency Management Agency (FEMA) estimated floodplain limits for 100-year storm events using Flood Insurance Rate Maps for Montgomery and Frederick counties. Since the 2002 DEIS, the Federal Emergency Management Agency (FEMA) has developed a Floodplain Mapping Study for Frederick County in which the 100-year floodplain boundaries for Carroll Creek, Monocacy River, Bennett Creek, and Urbana Branch have changed. Boundaries for 100-year floodplains are shown on the *Plan Sheets* in **Appendix A**. No changes were made to the Montgomery County 100-year floodplains.

The FEMA designated 100-year floodplains within the I-270/US 15 Corridor highway alignment parallel the main stems of Muddy Branch, Long Draught Branch, Great Seneca Creek, Gunners Branch, Little Bennett Creek, Bennett Creek, Monocacy River, Rock Creek, Carroll Creek, Tuscarora Creek and their tributaries.

The transitway alignment traverses many of the same 100-year floodplains associated with the I-270 Corridor highway alignment due to its north-south alignment along the roadway. In areas where the transitway is situated within the I-270 right of way, similar portions of the floodplain are crossed for Great Seneca Creek, Gunners Branch and their tributaries. Other portions

of the 100-year floodplains for Muddy Branch and its tributary are intersected as the transitway deviates east and west of the I-270 right-of-way to the proposed station locations.

**Impacts**

The significance of floodplain encroachment was evaluated with respect to the criteria in Executive Order 11988 *Floodplain Management*. The total floodplain impacts associated with Alternatives 6A/B and 7A/B will be the same, because the physical footprint for each alternative is the same. The floodplain impact for the highway component of the alternatives is 25.6 acres, while the transitway component impact is 2.8 acres. All construction occurring within the FEMA designated 100-year floodplain must comply with FEMA approved local floodplain construction requirements.

Avoidance, Minimization, and Mitigation

Efforts to minimize and avoid impacts to 100-year floodplains will continue throughout the planning and engineering process. Techniques that will be investigated to further minimize or avoid impacts may include alignment shifts to ensure the narrowest possible crossing, and bridging of floodplains to further reduce encroachment and allow for unrestricted passage of floodwaters. Hydrologic and hydraulic studies will be conducted to determine the appropriate bridge or culvert opening sizes for the various alternatives that will not appreciably raise flood levels. Should culverts need to be replaced, additional impacts to waters of the US could occur. All construction occurring within the FEMA designated 100-year floodplain must comply with FEMA approved local floodplain construction requirements.

Waters of the US including Wetlands

Existing Conditions

All waters of the US, including wetlands, were identified and flagged within the proposed right-of-way for Alternatives 6A/B and 7A/B highway and transitway alignments, park and ride lots, transitway stations, and O&M facilities using USACE regulatory guidance and *Wetland Delineation Manual* (USACE 1987). All other



Great Heron Wetland at Urbana Elementary School

methods associated with the wetland delineation and waterway identification are discussed in detail in the 2007 NETR.

Due to the overlap in the design between Alternatives 6A/B and 7A/B and the 2002 DEIS Alternatives 3A/B, 4A/B and 5A/B/C, between I-370 and I-70, a majority of the waters of the US previously flagged during the 1998 wetland delineation are also located within the right-of-way for Alternatives 6A/B and 7A/B. The 2002 DEIS includes a detailed discussion of those wetlands and waterways that have remained unchanged since the 1998 wetland delineation. Those wetlands and waterways delineated within Alternatives 6A/B and 7A/B are discussed in detail in the 2007 NETR.

No delineations for the highway and transitway park and ride lots and O&M facilities were included in the 2002 DEIS, as the designs were not completed. Delineations for these facilities were completed for Alternatives 6A/B and 7A/B and can be found in the 2007 NETR. Existing SWM ponds within the project corridor were identified from project mapping but were not delineated in the field. These facilities are shown on *Plan Sheets* in **Appendix A**.

A total of 143 numbered wetlands/waterways were flagged within the highway alignment and park and ride areas, while a total of 54 systems were flagged within the transitway alignment, transit stations, and





Table IV-26: Summary of Highway and Transitway Wetland and Waterway Impacts

ALTERNATIVES 6A/B & 7A/B	WETLAND <sup>1</sup> AND WATERWAY CLASSIFICATION				
	PEM (ACRES)	PSS (ACRES)	PFO (ACRES)	RIVERINE <sup>2</sup> (LINEAR FEET)	EPHEMERAL (LINEAR FEET)
Highway	6.9	2.0	4.1	20,198	10,812
Transitway <sup>3</sup>	1.2	0.3	1.1	4,006	1,646
Total	8.1	2.3	5.2	24,204	12,458

<sup>1</sup>Wetland classes are: PEM = Palustrine emergent, PSS = Palustrine scrub-shrub, PFO = Palustrine forested,  
<sup>2</sup>Includes perennial and intermittent streams  
<sup>3</sup>Includes transit stations

O&M facilities sites. The locations of the wetlands and waterways are shown on plan sheets included in **Appendix A**. Routine wetland delineation field data sheets, stream features sheets, and wetland functional assessment forms for each numbered wetland and waterway are included in the 2007 NETR.

Impacts

Waters of the US, including wetlands, are regulated under Sections 401 and 404 of the Clean Water Act and under the State of Maryland Nontidal Wetlands Protection Act. Impacts to these resources require a Section 401 Water Quality Certification from MDE and a Joint Federal/State permit for discharge of dredged or fill material into Waters of the US including wetlands.

The No-Build Alternative will have no effect on the Waters of the US, including wetlands, within the I-270/US 15 Corridor.

Wetland and waterway impacts associated with Alternatives 6A/B and 7A/B are the same, as the two alternatives would have the same physical footprint. A summary of wetland and waterway impacts by highway and transitway alignments and transit stations is shown in **Table IV-26**. **Table IV-24** summarizes the impacts associated with the potential transit O&M facilities. These impacts are not added to the total, as only a single site may be selected.

Emergent wetlands (PEM) are the wetland class that would be most affected by Alternatives 6A/B and 7A/B. Many of these emergent areas are connected to larger wetland systems that include Great Seneca Creek, Little Seneca Creek, Monocacy River, Rock Creek, Carroll Creek, and Tuscarora Creek. Forested wetlands would have the next highest impacts, and would include wetlands associated with the Monocacy River and Little Seneca Creek. These wetlands ranked high for the uniqueness/heritage values due to their affiliation with national (Monocacy National Battlefield) and state (Black Hill Regional Park) parks that have significant aesthetic and historical value.

Transitway alignment impacts for Alternatives 6A/B and 7A/B would be somewhat less than those for Alternatives 3A/B, 4A/B, and 5A/B/C because of shifts in the alignment that have occurred since the 2002 DEIS. The greatest decrease in wetland and waterway impacts has occurred just to the north of the proposed Metropolitan Grove Station.

Additional transitway impacts could occur from construction of a proposed O&M facility to service the transitway operations. Five potential sites are currently being investigated, but only a single site would be needed. Of the five potential sites, none would have wetland impacts and only the Police Vehicle Impound Lot and PEPCO Transmission Lines sites would have waterway impacts (**Table IV-24**).

Avoidance, Minimization and Mitigation

The No-Build Alternative would not impact waterways and wetlands, but would not meet the project’s purpose and need. Complete avoidance of impacts to surface waters and wetlands is not possible with a build alternative due to the quantity of these systems in the project area and their orientation perpendicular to the proposed alternatives. However, impacts have been avoided or minimized wherever possible through the initial placement of alignments to avoid unnecessary crossings. Investigations of further avoidance and minimization measures are on-going and will continue throughout all phases of engineering design for the project. Short-term construction impacts will be minimized through strict adherence to SHA erosion and sediment control procedures and MDE SWM regulations.

Mitigation planning for unavoidable wetland and waterway impacts of the I-270/US 15 Multi-Modal Corridor project have followed the guidelines of the *Maryland Compensatory Mitigation Guidance* (1994) and Section 404 requirements. On March 31, 2008, EPA and the USACE issued revised regulations governing compensatory mitigation for authorized impacts to wetlands, streams, and other waters of the US under Section 404. These regulations are designed to improve the effectiveness of compensatory mitigation to replace lost aquatic resource functions and area, expand public participation in compensatory mitigation decision making, and increase the efficiency and predictability of the mitigation project review process. The main differences between the guidance and the revised regulations include the mitigation preference hierarchy, the watershed approach to mitigation, and the mitigation plan approval process. The mitigation preference, based on the revised regulations, is mitigation banks, in-lieu fee, and permittee-responsible mitigation, while the past guidance only recommended permittee-responsible mitigation. Past guidance accepted on-site mitigation as meeting the mitigation requirement, but the new regulations state that a watershed approach is necessary to replace lost aquatic functions. The new regulations require that a final mitigation plan with the 12 required elements be approved before a permit can be issued for the

project, while past guidance only required a conceptual mitigation plan. Another important component to this ruling is that stream reestablishment is being discouraged but compensation for stream corridor restoration and enhancement is required. A more detailed discussion of the mitigation process and how it relates to this project are located in the 2007 NETR. Current guidance with regard to climate change will be monitored and included as appropriate (Transportation Research Board: *Special Report 290: Potential Impacts of Climate Change on US Transportation*.)

Identification of potential mitigation sites was described in the 2002 DEIS; no further investigations were completed for this study.

Wetlands of Special State Concern

As stated in the 2002 DEIS, one Wetland of Special State Concern, the Germantown Bog, is located approximately 400 feet upstream of the project area. The information presented in the 2002 DEIS is unchanged. Because the limits of Alternatives 6A/B and 7A/B do not exceed those of Alternatives 3A/B, 4A/B and 5A/B/C, there are still no anticipated impacts to the special state concern wetland.

Terrestrial Vegetation and Wildlife

Existing Conditions

Due to the overlap in the design between Alternatives 6A/B and 7A/B and the 2002 DEIS alternatives, the terrestrial plant communities and wildlife described in the 2002 DEIS are generally the same for Alternatives 6A/B and 7A/B.

The main types of communities within the highway alignment are agricultural land, developed land, and old field habitat. The types of wildlife found within agricultural land include white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), white-footed mouse (*Peromyscus leucopus*), American crow (*Corvus brachyrhynchos*), red-winged blackbird (*Agelaius phoeniceus*), mourning dove (*Zenaida macroura*), Canada goose (*Branta canadensis*), and ring-necked pheasant (*Phasianus colchicus*). Other species common within this habitat include grasshopper sparrow (*Ammodramus savannarum*), red-winged





blackbird, Eastern meadowlark (*Sturnella magna*), meadow vole (*Microtus pennsylvanicus*), groundhog (*Marmota monax*), and red fox (*Vulpes vulpes*). Species that may hunt these fields or use them during the winter include birds of prey such as red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*), and barn owl (*Tyto alba*); white-tailed deer; savannah sparrow (*Passerculus sandwichensis*); and dark-eyed junco (*Junco hyemalis*).

Much of the wildlife using those areas classified as developed, such as the European starling, is adapted to human-modified environments. These species that can inhabit smaller, more disturbed sites with a mix of vegetation types include gray squirrel (*Sciurus carolinensis*), eastern chipmunk (*Tamias striatus*), tufted titmouse (*Baeolophus bicolor*), Carolina chickadee (*Poecile carolinensis*), Carolina wren (*Thryothorus ludovicianus*), red-bellied woodpecker (*Melanerpes carolinus*), and downy woodpecker (*Picoides pubescens*).

Within the study area, wildlife species commonly occurring in old field habitats include white-tailed deer, meadow vole, shrew, fox, groundhog, eastern cottontail (*Sylvilagus floridanus*), black rat snake (*Elaphe obsoleta*), eastern garter snake (*Thamnophis sirtalis*), field sparrow (*Spizella pusilla*), gray catbird (*Dumetella carolinensis*), brown thrasher (*Toxostoma rufum*), common yellowthroat (*Geothlypis trichas*), yellow-breasted chat (*Icteria virens*), and house wren (*Troglodytes aedon*). Where small mammal populations are abundant, birds of prey such as red-tailed hawk and American kestrel are also common.

The same terrestrial habitats were identified along the transitway alignment as along the I-270/US 15 Corridor highway alignment, including agricultural, developed, old field, and forest.

Forests

Forest habitats occur as small strips between developments or farm fields and larger tracts along stream valleys, within wetlands, on steep-sloped areas, and within parklands. The dominant forest types are deciduous except where earlier successional stands contain a predominance of pine. While considerable

development has occurred along the corridor, particularly at the southern end, large forested tracts still remain within protected parkland. From south to north along the corridor, larger tracts of forest occur along Muddy Branch (Summit Hall and Muddy Branch Parks), within Brown’s Station Park, along Great Seneca Creek, along and adjacent to Little Seneca Creek (Black Hill Regional Park), along Little Bennett Creek, and along the Monocacy River (Monocacy National Battlefield). Smaller woodlots occur elsewhere along the corridor.

Impacts

Impacts to plant communities and wildlife associated with Alternatives 6A/B and 7A/B will be the same, as the two alternatives will have the same physical footprint. In general, impacts to plant communities by project build alternatives include direct losses from clearing within rights-of way and changes in plant community structure and composition. Effects to terrestrial resources will involve the conversion of habitat to impervious road, rail, or other associated facilities. The transitway O&M facilities are mostly proposed on undeveloped land adjacent to the transitway alignment, as are portions of the proposed transitway alignment between Metropolitan Grove Station and the proposed COMSAT station.

Potential forest impacts associated with Alternatives 6A/B and 7A/B include 268.6 acres for the highway component and 27.2 acres for the transitway component. Of the five O&M facilities, three would have forest impacts. The specific forest stands potentially impacted by Alternatives 6A/B and 7A/B are similar to those described in the 2002 DEIS.

Avoidance, Minimization and Mitigation

Before a sediment and erosion control permit is issued for a project, the Maryland Forest Conservation Act requires that a Forest Stand Delineation (FSD) and a Forest Conservation Plan (FCP) must be submitted and approved by the MDNR, Forestry Division. A more detailed forest assessment, including preparation of a FSD and FCP, would need to be completed for the project once an alternative has been selected and

more detailed design has been completed. All forest impacts would be addressed and mitigated requiring the minimization of clearing and cutting of forests and mitigation in compliance with the Forest Conservation Act (FCA). The discussion of mitigation options for unavoidable forest impacts would be the same as was described in the 2002 DEIS, including the requirements of the state FCA and Reforestation Law Natural Resource Article 5-103 for state funded projects.

Aquatic Habitat/Species

Existing Conditions

Aquatic habitat assessment is generally completed by state and local agencies alongside benthic macroinvertebrate and fish community field assessments. New aquatic community assessment locations were sampled by the MDNR, Maryland Biological Stream Survey (MBSS), the Montgomery County Department of Environmental Protection (MCDEP), and the Frederick County Department of Public Works (FCDPW) since the 2002 NETR was published. In addition, new aquatic habitat assessments were conducted by SHA during the fish and macroinvertebrate community sampling periods of summer 2006 and spring 2007.

Physical Habitat Assessment

Physical habitat assessment results from SHA sampling during 2006 and from county and state agency samplings are summarized in the text below. Additional discussion of physical habitat and aquatic species can be found in the 2007 NETR.

This habitat assessment was based on February 2001 MBSS guidelines, and was conducted within each of the 75-meter segments sampled for fish during 2006. Each of the 75-meter segments was evaluated for instream habitat, epifaunal substrate, velocity/depth diversity, pool/glide/eddy quality, riffle/run quality, embeddedness, shading, remoteness, bank stability, the amount of instream woody debris/rootwads, and the abundance of trash and human refuse.

Habitat scores and Index of Biotic Integrity (IBI) scores are positively correlated, with high habitat scores usually predicting high IBI scores. The physical habitat assessment methods were developed using parameters selected from the 1994-2000 MBSS data. Although a number of parameters are evaluated, for Piedmont sites, eight individual physical habitat metrics were determined to be most important in discriminating reference sites from degraded sites: remoteness, shading, epifaunal substrate, instream habitat, total number of instream woody debris and rootwads, embeddedness, riffle/run quality, and bank stability. Four categories of habitat health were established for the physical habitat index (PHI) as follows:

- Scores of 81 to 100 are rated “Minimally Degraded”
- Scores of 66 to 80.9 are rated “Partially Degraded”
- Scores of 51 to 65.9 are rated “Degraded”
- Scores of 0 to 50.9 are rated “Severely Degraded”

Physical Habitat Index (PHI) scores for sites newly sampled by SHA ranged from severely to partially degraded. The highest PHI scores were found in Carroll Creek, just downstream of I-270/US15. Aquatic habitat scores for Tuscarora Creek all fell within the Severely Degraded range. PHI scores within Muddy Run all fell within the Severely Degraded range. Habitat scores in Bennett Creek ranged from Degraded upstream of I-270 to Partially Degraded downstream of I-270. A detailed discussion of these scores can be found in the 2007 NETR.

Existing habitat data were available from the Montgomery County Department of Environmental Protection (MCDEP) aquatic assessments within the project study area. Within Little Bennett Creek, aquatic habitat was rated as Good by the MCDEP habitat assessment. The large number of sites sampled within Little Seneca Creek resulted in highly variable individual habitat assessment scores. Aquatic habitat within Great Seneca Creek ranged from Good/Fair to Good, while habitat scores within Muddy Branch were rated as Good by MCDEP. Aquatic habitat within Mill Creek was rated as Good by MCDEP and Poor by SHA. A detailed discussion of these scores can be found in the 2007 NETR.



### Aquatic Communities Assessment

Benthic macroinvertebrate community quality varied throughout the project study area. Little Seneca Creek and Little Bennett Creek contained the least impaired communities, while Carroll Creek and Rock Creek (Monocacy River tributary) were the most impaired. Benthic Index of Biotic Integrity (BIBI) scores from these watersheds are summarized in Table 19 of the 2007 NETR.

The MCDEP and the MBSS Fish Index of Biotic Integrity (FIBI) rated the fish communities highest within the Carroll Creek, Bennett Creek, and Ballenger Creek watersheds, while Muddy Run, Rock Creek, and the Monocacy River tributaries generally scored lowest. FIBI scores at sites sampled by SHA in 2006 ranged from Poor to Good. Table 21 in the 2007 NETR summarizes the results of the fish sampling within the project study area.

Detailed discussions of the fish communities found within the project area streams are presented in the 2007 NETR. Two Maryland state threatened fish species were collected within project area watersheds. *Margariscus margarita* (pearl dace) was collected in Carroll Creek, Monocacy River, and Rock Creek watersheds. *Notropis amoenus* (comely shiner) was collected in Bennett Creek and not found in any other project area watersheds. These collections are discussed further in the next section.

### Impacts

The No-Build Alternative will not have an effect on the aquatic biota of the study area watersheds. All of the build alternatives have the potential to affect aquatic biota in the project area.

Direct impacts include changes that cause an immediate and obvious alteration of the resources. The primary direct impacts to aquatic biota from Alternatives 6A/B and 7A/B would be mortality of aquatic organisms during construction of stream crossings from heavy equipment, and loss of natural habitat from placement of culvert pipes and other in-stream structures.

Direct impacts to stream channels require a Section 404 permit from the USACE, as well as a Section 401 water quality certification from MDE. A waterway construction permit from MDE would also be required for work in streams and floodplains.

The fish communities are more mobile than macroinvertebrates and can respond to short-term water quality or flow impacts through avoiding sections of the stream and relocating. However, long-term changes in flow regimes and habitat from imperviousness could eventually alter the diversity of resident fish communities. Sensitive fish species within the study area such as brown trout and rainbow trout and state threatened species such as the comely shiner and pearl dace could be negatively affected by an increase in impervious cover.

### Avoidance and Minimization

Complete avoidance of impacts to aquatic habitat and species is not possible with a build alternative due to the quantity of streams and stream crossings within the project area. The No-Build Alternative would avoid impacts, but does not meet the project's purpose and need. Impacts have been avoided as much as possible by the placement of the alternatives to avoid additional unnecessary crossings and linear crossings of aquatic habitats. Investigations of further avoidance and minimization measures are on-going and will continue throughout all phases of engineering design and construction for the project.

## Rare, Threatened, and Endangered Species

### Existing Conditions

The US Fish and Wildlife Service (USFWS) and the MDNR Wildlife and Heritage Division (WHD) were contacted in February 2006 to update the information regarding the presence of rare, threatened, or endangered (RTE) species immediately adjacent to the project area or within one mile of the highway corridor and transitway alignments. Response letters were

received from MDNR in February and May of 2006 and the USFWS letter was received in September 2006.

There are no federally proposed or listed endangered or threatened species known to exist within the project impact areas. Therefore, no biological assessment or further Section 7 consultation is required with the USFWS.

The RTE species information relating to state listed species as discussed in the 2002 DEIS is updated to include two newly-listed state threatened species: pearl dace and comely shiner. Both species were not mentioned in the MDNR response letter, but both specimens were caught during the fish sampling of Carroll Creek and Bennett Creek conducted in the summer of 2006 by SHA. The MDNR-WHD list of RTE animals states that both species are state ranked as rare with a threatened status in Maryland. The fish sampling techniques used in each of these streams is described in detail in the Water Quality section of the 2007 NETR. These two records have since been reported to MDNR-WHD for comment and cataloging.

The *Arabis shortii* (short's rockcress) status has been downgraded since the 2002 NETR was issued. The short's rockcress no longer has a state threatened status and is now listed as a watch list species. Species that are on the watch list are rare to uncommon with the number of occurrences typically in the range of 21 to 100 in Maryland.

The Germantown Bog is a Wetland of Special State Concern that lies over 1,000 feet east of the I-270/US 15 Corridor within an unnamed tributary to Little Seneca Creek. The listed species within the Germantown Bog include *Sanguisorba canadensis* (Canadian burnet), *Sphenopholis pennsylvanica* (swamp-oats), and *Carex buxbaumii* (Buxbaum's sedge). A new RTE survey for the state listed threatened species known to occur within the Germantown Bog was conducted on June 29, 2007, during the corresponding flowering periods for these species (May to October). None of the listed species were observed within the I-270 project study area or a nearby emergent wetland.

### Impacts

The No-Build Alternative will avoid impacts to the RTE species within the I-270/US 15 Corridor, but would not meet the project's purpose and need.

Selection of a build alternative for the I-270/US 15 Corridor project has the potential to negatively affect the RTE fish species located within the study area. Impacts to the comely shiner and pearl dace would likely be similar to the impacts to other aquatic biota.

### Avoidance, Minimization and Mitigation

Avoidance, minimization, and mitigation of these impacts to the comely shiner and pearl dace can be accomplished using different methods. To help avoid impacts, all in-stream work for culverts and bridges will be carried out in compliance with MDE requirements related to state-mandated stream closure periods for the designated use class of the stream, which is administered by MDE. In-stream work is prohibited, for the protection of aquatic species, in Use I streams from March 1 through June 15, Use III streams from October 1 through April 30, and Use IV streams from March 1 through May 31. In response to potential impacts to RTE fish species on other projects, stream closure periods during construction activities have been extended. In Use III streams, such as Carroll Creek, the mandatory stream closure period may be extended to October 1 through April 30 or July 31. Other measures recommended by resource agencies to minimize impacts to these species include the use of BMPs for erosion control, on-site environmental inspectors to ensure erosion and sediment control compliance, and improvements to existing water quality and stream channel degradation in these watersheds through mitigation and environmental stewardship. Unavoidable direct impacts to stream channels would be mitigated in accordance with state and federal regulations through projects aimed at improving water quality.





## G. Hazardous Materials

This section explains the methods and analyses used to investigate the potential for hazardous material sites within the project study area. These sites may or may not be impacted by the build alternatives. Investigation results and recommendations for potential next steps are also identified.

### Methods and Analyses

An Initial Site Assessment (ISA) for the project area was conducted in 1998 and its findings presented in the 1999 Preliminary Screening Assessment Report and the 2002 DEIS. The ISA identified the potential areas of hazardous material on properties that would be impacted by the build alternatives. The ISA included field reconnaissance, a search of the regulatory databases, and a review of public regulatory documents. The assessment was conducted in general accordance with applicable portions of the American Standard for Testing and Materials (ASTM) guidance titled *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM E1527-05). It should be noted the ISA was intended to support planning level decisions related to the alternatives and not intended to directly facilitate any potential right-of-way acquisitions.

### Results and Recommendations

The ISA did not identify any sites where construction of the proposed transportation alternatives would be expected to encounter severe soil or groundwater contamination. Modest levels of soil or groundwater contamination were documented at five facilities and suspected at four facilities within the project area. These facilities include six Leaking Underground Storage Tank sites, such as service stations, which are under MDE regulation, and three No Further Remedial Action Planned sites regulated by EPA. Information regarding

these sites and others identified in the ISA is available in the 2002 DEIS in Chapter III.I (page III-224). An additional nine Potential Sites of Concern, which were not included in the regulatory databases as contaminant release sites, were identified during field work. These locations of potential contamination were identified based on their proximity to the proposed alignments and observation of site operations (heavy equipment storage and maintenance, underground storage tank replacement, monitoring well installation or electrical power distribution). These sites could be considered as potential sources of environmental contamination during construction of a build alternative.

The 2002 DEIS identified six of these sites that could be impacted by Alternatives 3A/B, 4A/B, or 5A/B/C. The six sites included three sites of potential concern where heavy equipment is stored and/or maintained, two sites where leaking underground storage tanks had been identified by MDE, and one former gasoline spill site. Alternatives 6A/B and 7A/B may also impact these sites.

It is recommended that more detailed environmental assessments should be performed for specific sites of concern and large property acquisitions following approval of a build alternative and prior to property acquisition and negotiation. A regulatory database search should be performed to update the documentation on known contaminant releases along the alignment. Where appropriate, based on site observations and available documentation, assessment efforts may include Phase II Site Investigations with soil and/or groundwater sampling and analysis.

## H. Air Quality

This air quality section begins with the regulatory framework for the study of the project area air quality and includes a listing of the National Ambient Air Quality Standards. Regional air quality, attainment status and regional conformity are then discussed. Ambient air quality in the study area is identified, followed by a discussion of the pollutants for analysis. The regional analysis is followed by a summary of the updated local, or microscale, analysis of the project area for Alternatives 6A/B and 7A/B (carbon monoxide assessment). A qualitative analysis of PM<sub>10</sub> and PM<sub>2.5</sub> (fine particles 10 and 2.5 micrometers or smaller, respectively), and Mobile Source Air Toxics (MSATs), both updated requirements since the 2002 DEIS, is included. Further information about the air quality analysis and results can be found in the June 2007 *I-270/US 15 Multi-Modal Corridor Study Air Quality Technical Report (AQTR)*.

### Regulatory Framework for Study Area Air Quality

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants degrade the atmosphere by reducing visibility, damaging property, reducing the productivity or vigor of crops or natural vegetation, or reducing human or animal health. The Clean Air Act and Amendments of 1990 (CAAA) and the Final Transportation Conformity Rule (40 CFR Parts 51 and 93) direct the EPA to implement environmental policies and regulations that will ensure acceptable levels of air quality. The EPA has established the National Ambient Air Quality Standards (NAAQS) in accordance with the requirements of the CAAA and requirements of the Conformity Rule. These standards are summarized on **Table IV-27**.

In addition to the criteria pollutants for which there are NAAQS, EPA also regulates air toxics. Toxic air pollutants are pollutants known or suspected to cause cancer or other serious health effects. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). The Clean Air Act (CAA)

identified 188 air toxics. In 2001 the EPA identified 21 MSATs and highlighted six of these as priority MSATs.

Since 2001, EPA has conducted an extensive review to produce a list of compounds identified in the exhaust or evaporative emissions from on-road and non-road equipment, as well as alternative fuels. This list currently includes approximately 1,000 compounds, many emitted in trace amounts. In February 2007, EPA finalized a rule to reduce hazardous air pollutants from mobile sources (*Control of Hazardous Air Pollutants from Mobile Sources*, February 9, 2007). The rule limits the benzene content of gasoline and reduces toxic emissions from passenger vehicles and gas cans. EPA estimates that in 2030 this rule would reduce total nationwide emissions of MSATs by 330,000 tons and volatile organic compounds (VOC) emissions (precursors to ozone and PM<sub>2.5</sub>) by more than one million tons.

### Regional Air Quality, Attainment Status and Regional Conformity

Section 107 of the 1977 CAAA requires that EPA publish a list of all geographic areas in compliance with the NAAQS, referred to as attainment areas, as well as those areas not in attainment, referred to as nonattainment areas, of the NAAQS. The designation of an area is made on a pollutant-by-pollutant basis. Areas that have had a history of nonattainment, but are now consistently in attainment are called maintenance areas. Maintenance areas require a maintenance plan to show how they will stay in attainment. The State Implementation Plan (SIP) is the state's air quality plan that demonstrates how the state plans to meet EPA air quality attainment deadlines. The SIP includes both mobile source (transportation) programs and stationary source programs.

The I-270/US 15 study area is part of a maintenance area for carbon monoxide (CO), a nonattainment area for PM<sub>2.5</sub> and a moderate nonattainment area for ozone (O<sub>3</sub>). The area must come into attainment for PM<sub>2.5</sub> and O<sub>3</sub> by April 2010 and June 2010, respectively. Attainment status PM<sub>2.5</sub> standards will be based on monitored data collected in 2007-2009. Area designations will be issued in 2010.



Table IV-27: National Ambient Air Quality Standards

POLLUTANT	PRIMARY STANDARDS		SECONDARY STANDARDS	
	LEVEL	AVERAGING TIME	LEVEL	AVERAGING TIME
Carbon Monoxide (CO)	9 ppm 10 mg/m <sup>3</sup>	8 hour <sup>a</sup>	None	
	35 ppm (40 mg/m <sup>3</sup> )	1-hour <sup>a</sup>		
Lead (Pb)	0.15 µg/m <sup>3</sup> <sup>b</sup>	Rolling 3-month average	Same as Primary	
	1.5 µg/m <sup>3</sup>	Quarterly Average	Same as Primary	
Nitrogen Dioxide (NO <sub>2</sub> )	0.053 ppm (100 µg/m <sup>3</sup> )	Annual (Arithmetic Mean)	Same as Primary	
Particulate Matter (PM <sub>10</sub> )	150 µg/m <sup>3</sup>	24-hour <sup>c</sup>	Same as Primary	
Particulate Matter (PM <sub>2.5</sub> )	15.0 µg/m <sup>3</sup>	Annual <sup>d</sup> (Arithmetic Mean)	Same as Primary	
	35 µg/m <sup>3</sup>	24-hour <sup>e</sup>	Same as Primary	
Ozone (O <sub>3</sub> )	0.075 ppm (2008 std)	8-hour <sup>f</sup>	Same as Primary	
	0.08 ppm (1997 std)	8-hour <sup>g</sup>	Same as Primary	
	0.12 ppm	1-hour <sup>h</sup> (Applies only in limited areas)	Same as Primary	
Sulfur Dioxide (SO <sub>2</sub> )	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m <sup>3</sup> )	3-hour <sup>3</sup>
	0.14 ppm	24-hour <sup>a</sup>		

<sup>a</sup>Not to be exceeded more than once per year.  
<sup>b</sup>Final rule signed October 15, 2008.  
<sup>c</sup>Not to be exceeded more than once per year on average over 3 years.  
<sup>d</sup>To attain this standard, the 3-year average of the weighted annual mean PM<sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m<sup>3</sup>.  
<sup>e</sup>To attain this standard, the 3-year average of the 98th percentile of the 24-hour concentrations at each population- oriented monitor within an area must not exceed 35 µg/m<sup>3</sup> (effective December 13, 2006).  
<sup>f</sup>To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm (effective May 27, 2008).  
<sup>g</sup>(1) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.  
(2) The 1997 standard-and the implementation rules for that standard – will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.  
<sup>h</sup>(1) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is ≤1.  
(2) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.  
Source: [www.epa.gov/air/criteria.html](http://www.epa.gov/air/criteria.html) (October 30, 2008)  
Abbreviations: ppm = parts per million; mg/m<sup>3</sup> = milligrams per cubic meter; µg/m<sup>3</sup> = micrograms per cubic mete

Table IV-28: Project Area Ambient Air Quality Summary, 2003 - 2005

POLLUTANT	NUMBER OF MONITORING LOCATIONS	AVERAGING TIME	STANDARD	MAXIMUM RECORDED <sup>1</sup>			NUMBER OF EXCEEDANCES <sup>2</sup>		
				2003	2004	2005	2003	2004	2005
CO	2	1-hour	35 ppm	3.6	3.7	2.7	0	0	0
		8-hour	9 ppm	2.8	2.5	1.9	0	0	0
PM <sub>10</sub>	1	24-hour	150 µ/m <sup>3</sup>	52	48	48	0	0	0
PM <sub>2.5</sub>	3	24-hour	35 µ/m <sup>3</sup>	53	45	41	0	0	1
NO <sub>2</sub>	2	Annual mean	0.053 ppm	0.023	0.018	0.017	0	0	0
O <sub>3</sub>	5	8-hour	0.08 ppm	0.116	0.109	0.100	3 <sup>3</sup>	3 <sup>3</sup>	3 <sup>3</sup>

<sup>1</sup>Indicates the maximum recorded at any one of the number of stations providing that data.  
<sup>2</sup>Indicates the highest number of days the standard was exceeded at any one of the stations providing that data.  
<sup>3</sup>For ozone, more than one of the monitoring stations reported multiple days that the standard was exceeded.  
Source: EPA Office of Air Quality Planning and Standards (AIRS Data) website [www.epa.gov/air/data/geosel.html](http://www.epa.gov/air/data/geosel.html)

Frederick and Montgomery counties are part of MWCOG, which provides daily reports and forecasts of regional air quality. Through the MWCOG, the Metropolitan Washington Air Quality Committee (MWAQC) prepares the air quality plan for the DC-MD-VA metropolitan area. The National Capital Region Transportation Planning Board (TPB) is the federally designated Metropolitan Planning Organization (MPO) for the region. The TPB prepares metropolitan transportation plans and programs that are used as the basis for the Statewide Transportation Improvement Program (STIP) which the federal government must approve in order for federal-aid transportation funds to flow to the Washington region.

A transportation project is analyzed as part of a regional transportation network developed by the county or state in metropolitan areas. The projects included in this network are found in the regional Transportation Improvement Plan (TIP), also prepared by MWCOG. The TIP is the basis for the regional mobile source air quality analysis which utilizes vehicle miles traveled (VMT) and vehicle hours traveled (VHT) within the region to determine daily “pollutant burden” levels. The results of this analysis help determine if an area is in conformity with regulations set forth in the Final Conformity Rule.

The I-270/US 15 project is an element of the 2007 CLRP and the FY 2008-2013 TIP, which were adopted by the TPB on April 16, 2008. FHWA and FTA approved the TPB’s conformity determination related to these documents on June 11, 2008.

Ambient Air Quality in the Study Area

The Air and Radiation Management Administration, within MDE is responsible for implementing and enforcing regulations to assure that the air Maryland citizens breathe is clean and healthful. MDE monitors the six criteria pollutants year round at 33 monitoring sites. The Office of Air Quality Monitoring within the Virginia Department of Environmental Quality is responsible for seeing that the Virginia ambient air monitoring network is maintained and operated in accordance with State and Federal guidelines. The MWCOG collects and distributes air quality data from monitors located throughout the Washington DC, Virginia and Maryland area. **Figure IV-11** shows the location of the monitors within the DC-VA-MD metropolitan area, relative to the project’s study area. Monitored air quality data for criteria pollutants within or near the study for the years 2003-2005 is summarized in **Table IV-28**.

Air quality monitoring stations that may reflect area pollutant levels include those at Cub Run Lee Road and Lewinsville/McLean in Fairfax County, Virginia; Broad Run High School in Ashburn, Loudoun County, Virginia; Rockville, Montgomery County, Maryland; and Frederick Municipal Airport, Frederick County, Maryland.

Figure IV-11: Air Quality Monitors Within the DC-VA-MD Area

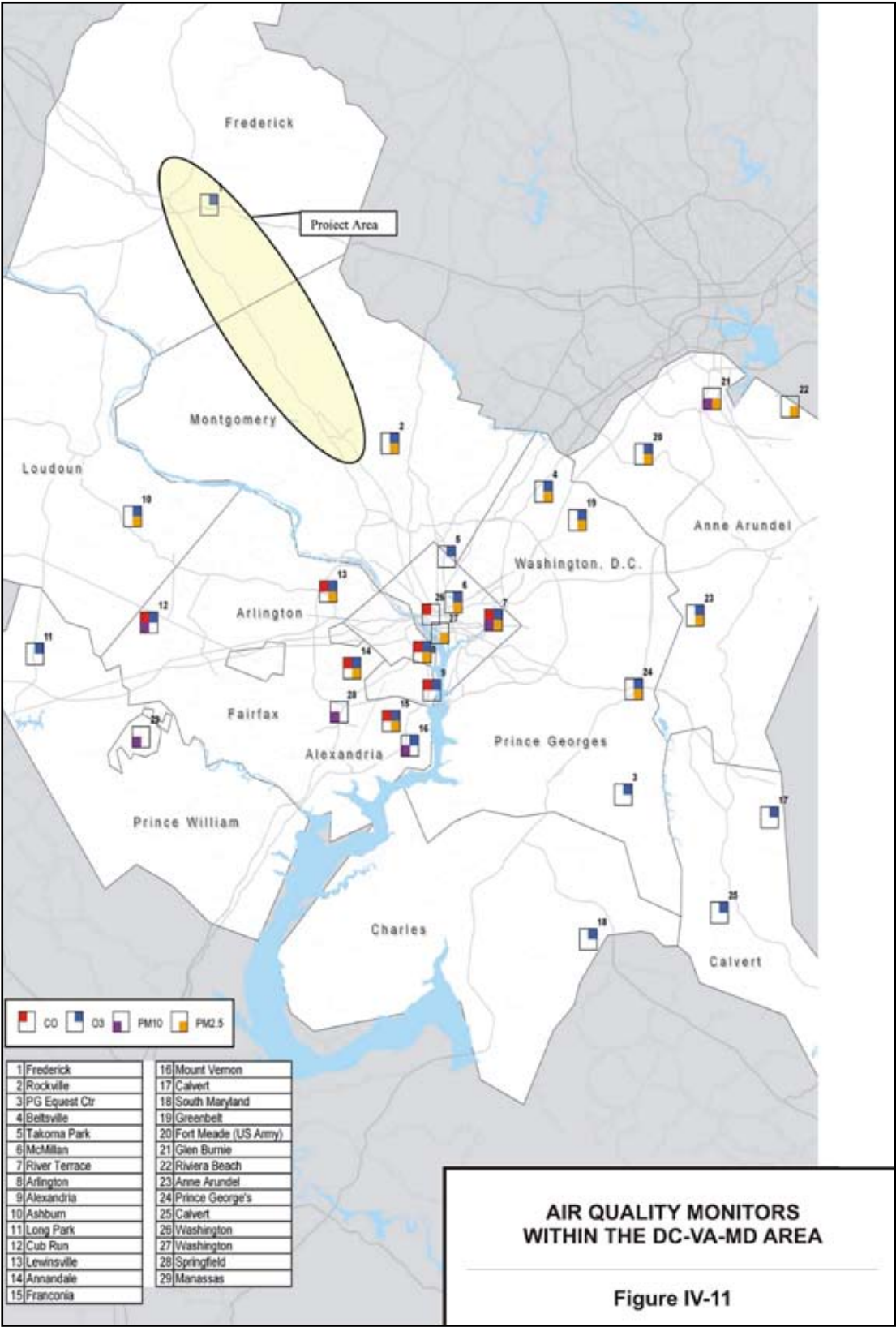


Table IV-29: Regional Pollutant Burden (Kg/day)

YEAR/ALTERNATIVE		2015			2030		
		NO-BUILD	ALT 6A/B	ALT 7A/B	NO-BUILD	ALT 6A/B	ALT 7A/B
VMT		34,681,505	34,915,117	34,994,629	40,557,948	40,950,909	41,020,351
% Change from No-Build			0.67%	0.90%		0.97%	1.14%
Pollutant:	CO	110,996	111,715	111,967	116,733	117,352	117,331
	NO <sub>x</sub>	16,207	16,372	16,404	8,288	8,350	8,334
	PM <sub>10</sub>	1,337	1,349	1,352	1,372	1,391	1,392
	PM <sub>2.5</sub>	662	668	669	632	641	642
	VOC	11,447	11,617	11,640	9,384	9,383	9,395
Kg/day							
% Change from No-Build							

Pollutants for Analysis

Pollutants that can be traced principally to motor vehicles and buses are relevant to the evaluation of the project impacts. These pollutants include CO, VOC, nitrogen oxides (NO<sub>x</sub>), O<sub>3</sub>, PM<sub>10</sub>, PM<sub>2.5</sub> and MSATs. Transportation sources account for a small percentage of regional emissions of sulfur oxides (SO<sub>x</sub>) and lead (Pb); thus, a detailed analysis is not required.

VOC and NO<sub>x</sub> emissions from vehicles are a concern primarily because they are precursors in the formation of ozone and particulate matter. Ozone is formed through a series of reactions which occur in the atmosphere in the presence of sunlight. Since the reactions are slow and occur as the pollutants are diffusing downwind, elevated ozone levels are often found many miles from sources of the precursor pollutants. Therefore, the effects of VOC and NO<sub>x</sub> emissions generally are examined on a regional basis.

CO impacts are generally localized. Even under the worst meteorological conditions and most congested traffic conditions, high concentrations are limited to within a relatively short distance (300 – 600 feet) of heavily traveled roadways. Vehicle emissions are the major sources of CO. Since the proposed project could change traffic patterns within the study area, it is appropriate to predict concentrations of CO on both a regional and a localized or “microscale” basis.

PM<sub>10</sub> and PM<sub>2.5</sub> impacts are both regional and local. A significant portion of particulate matter, especially PM<sub>10</sub>, comes from disturbed vacant land, construction activity and paved road dust. PM<sub>2.5</sub> also comes from these sources. Motor vehicle exhaust, particularly from diesel vehicles, is also a source of PM<sub>10</sub> and PM<sub>2.5</sub>. Thus it is appropriate to address impacts of PM<sub>10</sub> and PM<sub>2.5</sub> on a regional basis.

MSAT impacts are both regional and local. Through the issuance of EPA’s *Final Rule Regarding Emission Control of Hazardous Air Pollutants from Mobile Sources* [EPA420-F-07-017] in February 2007, it was determined that many existing and newly promulgated mobile source emission control programs would result in a reduction of MSATs. FHWA projects that even with a 64 percent increase in vehicle miles traveled (VMT), the programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent. As a result EPA has concluded that no further motor vehicle emission standards or fuel standards are necessary to further control MSATs.

Regional Analysis

To determine the project’s regional impact, a regional analysis was conducted based on overall regional VMT and VHT. As shown in *Table IV-29*, the build alternatives are expected to generally increase regional



Table IV-30: Air Quality Analysis Sites

SITE #	SITE DESCRIPTION	SITE #	SITE DESCRIPTION
1	Muddy Branch Road and Great Seneca Highway	20	MD 121 and MD 355 (Historical Church)
2	Field Road and Sam Eig Highway	21	Little Bennett Regional Park
3	MD 355 and Shady Grove Road	22	8546 Fingerboard Road – Residence
4	MD 117 and MD 124	23	MD 80 and I-270 Ramps
5	I-270 ramps at MD 117	24	Urbana Community Park
6	MD 117 and Perry Parkway	25	8358 Fingerboard Road – Residence
7	MD 355 and Montgomery Village Avenue	26	MD 85/Spectrum Avenue
8	MD 355 and Watkins Mill Road	27	I- 270 ramps and MD 85
9	New Covenant Fellowship Church	28	5819 Farmgate Court – Residence
10	Staleybridge Road – Residence	29	Monocacy National Battlefield
11	MD 355 and Middlebrook Road	30	Jefferson, Prospect, and Pearl Streets
12	MD 118 southbound and Middlebrook Road	31	Waterford Park
13	Crystal Rock Drive and MD 118	32	Fairfield Park
14	I-270 northbound ramps and MD 118	33	Residence near Waterford Park
15	MD 118 and Observation Drive	34	US 15 and Rosemont interchange
16	Milestone Apartments	35	US 15 ramps at 7 <sup>th</sup> Street
17	MD 355 and Father Hurley Boulevard (MD 27)	36	Rose Hill Manor
18	Black Hill Regional Park	37	MD 26 and Trading Lane
19	I-270 ramps at MD 121		

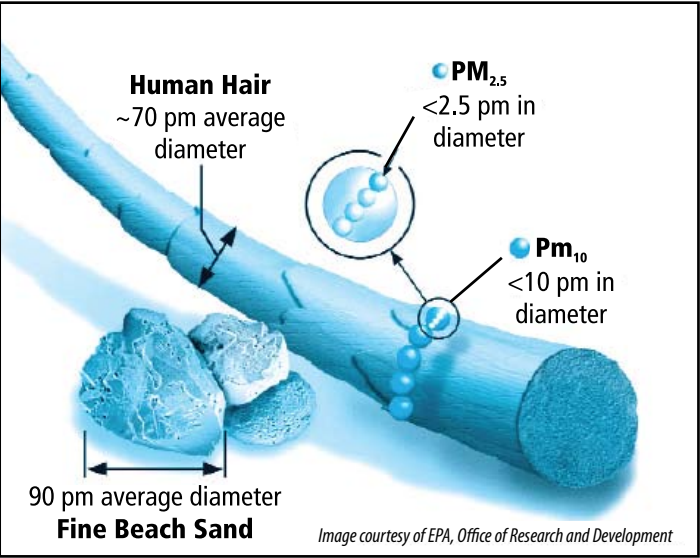
pollutant burdens when compared to the No-Build Alternative. These increases are due to increased VMT for each build alternative, compared to the No-Build Alternative, and associated speed fluctuations. In 2015, Alternative 7A/B is predicted to have the larger increase in regional pollutant burden levels when compared to Alternative 6A/B, using the No-Build Alternative as a base. This increase ranges from 0.7 percent in PM<sub>10</sub> and PM<sub>2.5</sub> to 1.3 percent for VOC regional levels.

In 2030, Alternative 7A/B is predicted to have the larger increase in PM<sub>10</sub> and PM<sub>2.5</sub> regional levels, the same impact on CO levels and a smaller increase in NO<sub>x</sub> levels, as compared to Alternative 6A/B, using the

No-Build Alternative as a base. Both build alternatives are predicted to reduce VOC levels by 2030, as is the No-Build Alternative. Differences in 2030 VOC levels between the No-Build, Alternative 6A/B and Alternative 7A/B are not significant.

The predicted changes to regional pollutant levels are relatively small overall, ranging from an increase of 1.1% to a reduction of 0.3%. Based on these changes, the project alternatives are predicted to have a minimal effect on regional pollutant levels.

Figure IV-12: Relative Particulate Matter Size



Project Area Carbon Monoxide Assessment

Air quality modeling was performed using the most recent version of the EPA mobile source emission factor model (MOBILE6.2) and the CAL3QHC (Version 2) air quality dispersion model to estimate future CO levels at selected locations in the study area for the No-Build Alternative and Alternatives 6A/B and 7A/B.

The locations chosen for air quality monitoring were selected through a screening methodology based on intersection volumes, levels of service, project-induced changes in traffic conditions, areas of community concern and/or locations of sensitive receptors such as residences, schools, parks, and churches. The sites chosen for analysis are listed in **Table IV-30** and shown on the **Plan Sheets** in **Appendix A**. CO levels were estimated at 37 sites within the study area using the CAL3QHC (Version 2) model. Of the sites, 23 are intersections and 14 are free flow locations. Analysis locations were chosen in accordance with the guidelines found in EPA’s *Guidelines for Modeling Carbon Monoxide from Roadway Intersections* (EPA-454/R-92-005) and with respect to the unique geometry of each analysis site.

Maximum one-hour and eight-hour CO levels were predicted at each of the 37 sites. No violations of the NAAQS (greater than 35 ppm for the one hour standard or greater than 9 ppm for the 8 hour standard) are predicted in any year under any alternative. There are no impacts to CO levels predicted to result from the implementation of Alternatives 6A/B or 7A/B.

Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)

On March 10, 2006, EPA issued a Final Rule regarding the localized or “hot-spot” analysis of PM<sub>2.5</sub> and PM<sub>10</sub> (40 CFR Part 93). This rule requires that PM<sub>2.5</sub> and PM<sub>10</sub> hotspot analysis be performed only for transportation projects with significant diesel traffic in areas not meeting PM<sub>10</sub> or PM<sub>2.5</sub> air quality standards. The project area is in attainment for PM<sub>10</sub> and in a nonattainment area for the 1997 PM<sub>2.5</sub> standards. As such, the Transportation Conformity requirements of 40 CFR Part 93 apply to this project.

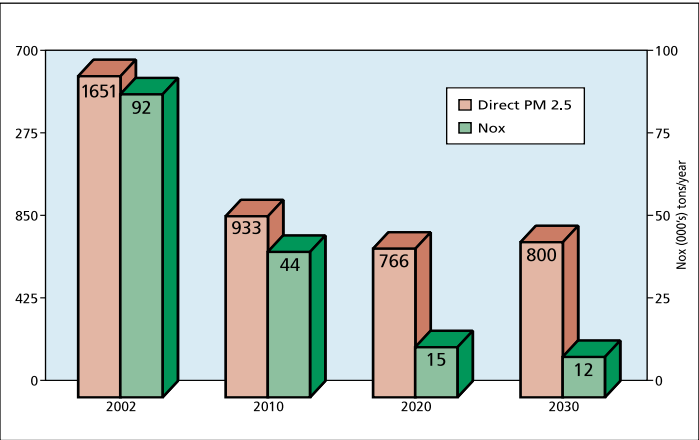
To fulfill these requirements, analyses of the Locally Preferred Alternative (LPA) will be undertaken to ensure that it does not cause any violations of the 1997 health-based standard for PM<sub>2.5</sub>, nor contribute to any existing violations. Until an LPA is selected however, information on the potential impacts of the proposed project alternatives will be qualitatively discussed and compared.

Particulate pollution is composed of solid particles or liquid droplets that are small enough to remain suspended in the air. PM<sub>2.5</sub> refers to the particles whose diameter is less than or equal to 2.5 microns. **Figure IV-12** illustrates the relative size of these small particles compared to a human hair and a grain of sand. These small particles are of particular concern as they can penetrate the human respiratory system and damage the respiratory tract. Recent research also suggests a potential health impact due to PM<sub>2.5</sub> emissions associated with near-roadway exposure.

The project is located in an area designated in 2005 by the EPA as not meeting the 1997 PM<sub>2.5</sub> 24-hour air quality standard of 65 µg/m<sup>3</sup>. The standard was revised to 35 µg/m<sup>3</sup> in 2006. Designations based on these revised standards are not expected until 2010 and will be based on 2007-2009 data, and conformity



Figure IV-13: PM<sub>2.5</sub> Emission Trends



requirements of 40 CFR Part 93 for the revised standard do not apply until one year after the effective date of new designations. 2003-2005 monitoring data near the project area indicates no exceedances of the 24-hour standard. It does appear, however, that the current 2006 standard of 35 µg/m<sup>3</sup> was exceeded several times.

As shown in **Figure IV-13**, recent estimates by MWCOG show decreasing emissions of PM<sub>2.5</sub>. The area is required to demonstrate attainment to the 1997 standard by 2010. The MWCOG projects that the area will reach attainment by 2009. The area, therefore, is expected to meet the 1997 health based standard before the project opens.

Based on currently available data, the region appears likely to be designated nonattainment for the 2006 standards. However, EPA projections show the area as meeting this standard by 2015, the year the project opens<sup>1</sup>. In addition, it is important to note that national vehicle and engine standards promulgated by the EPA, which include the 2007 heavy duty engine/fuel rule<sup>2</sup>, are anticipated to decrease emissions from motor vehicles in the coming years.

The purpose of the I-270/US 15 Multi-Modal

<sup>1</sup> See [http://www.epa.gov/oar/particlepollution/pdfs/20061025\\_graphsmaps.pdf](http://www.epa.gov/oar/particlepollution/pdfs/20061025_graphsmaps.pdf)

<sup>2</sup> See <http://www.epa.gov/fedrgstr/EPA-AIR/2001/January/Day-18/a01a.pdf>

Corridor Study is to investigate options to relieve congestion and improve safety conditions along the I-270/US 15 Corridor. The proposed project is expected to improve access, highway capacity and safety conditions, and accommodate anticipated traffic growth in the area. The project is not predicted to significantly increase diesel vehicles/trucks along the project corridor. The main air quality difference between the alternatives under consideration is the use of a Bus Rapid Transit (BRT) system or a Light Rail Transit (LRT) system. The LRT system will be electrically powered and is not expected to increase PM<sub>2.5</sub> levels due to the LRT operation. The operation of the BRT system has the potential to introduce more diesel vehicles into the study area as compared to the LRT system. However, with the emission control measures already implemented, including the *Clean Diesel Truck and Bus Rule* which will put the cleanest running heavy-duty trucks and buses in history on the roads, the BRT fleet will be 95 percent cleaner than today's trucks and buses. The impact of the additional buses under the BRT alternatives is predicted to be minimal. In addition, the use of alternative fueled buses is also a consideration for the project.

Both the LRT and BRT alternatives have the potential to increase the number of diesel vehicles at station locations and possibly maintenance facilities. The implementation of previously discussed emission control measures is predicted to minimize any potential impact on PM<sub>2.5</sub> emission levels due to stations and maintenance facilities.

An analysis of the locally preferred alternative will be undertaken to ensure that it does not cause any violations of the 1997 health-based standard for PM<sub>2.5</sub> nor contribute to any additional violations. This analysis will be conducted to ensure that the project demonstrates a satisfactory capacity to meet all applicable requirements related to Transportation Conformity, including an assessment of any localized (or hot-spot) PM<sub>2.5</sub> emission impacts.

### Analysis of MSAT

Technical shortcomings of emissions and dispersion models and uncertain science with respect to health effects prevent meaningful or reliable estimates of MSAT emissions and effects of this project. However, even though reliable methods do not exist to accurately estimate the health impacts of MSAT at the project level, it is possible to qualitatively assess the levels of future MSAT emissions under the project. Although a qualitative analysis cannot identify and measure health impacts from MSAT, it can give a basis for identifying and comparing the potential differences in MSAT emissions, if any, from the alternatives. The qualitative assessment, which will compare VMT between alternatives, is derived in part from a study conducted by the FHWA entitled *A Methodology for Evaluating Mobile Source Air Toxic Emissions Among Transportation Project Alternatives*, found at: <http://www.fhwa.dot.gov/environment/airtoxic/msatcompare/msatemissions.htm>

The amount of MSAT emitted would be proportional to the VMT, assuming that other variables such as fleet mix are the same. The VMT estimated for the build alternatives is slightly higher than that for the No-Build Alternative, because the additional capacity increases the efficiency of the roadway and attracts vehicle trips from elsewhere in the transportation network. The change is expected to be less than 1.2 percent. The increased VMT would lead to higher MSAT emissions for the build alternative along the highway corridor, along with a corresponding decrease in MSAT emissions along the parallel routes. The emissions increase is also offset somewhat by lower MSAT emission rates due to increased speeds, because according to EPA's MOBILE6.2 emissions model, emissions of all of the priority MSAT except for diesel particulate matter decrease as speed increases. The extent to which these speed-related emissions decreases will offset VMT-related emissions increases cannot be reliably projected due to the inherent deficiencies of technical models. In addition, construction of the project is predicted to decrease travel times, thus reducing idling, thereby reducing emissions.

The additional travel lanes contemplated as part of the project alternatives may have the effect of moving some traffic closer to nearby homes, schools and businesses; therefore, there may be localized areas where ambient concentrations of MSAT could be higher under Alternatives 6A/B and 7A/B than under the No-Build Alternative. However, as discussed previously, the magnitude and the duration of these potential increases compared to the No-Build Alternative cannot be accurately quantified due to the inherent deficiencies of current models.

In summary, when new travel lanes are constructed, the localized level of MSAT emissions for the build alternatives could be higher relative to the No-Build Alternative, but this could be offset due to increases in speeds and reductions in congestion, which are associated with lower MSAT emissions. Also, MSAT will be lower in other locations when traffic shifts away from them. However, on a regional basis, EPA's vehicle and fuel regulations coupled with fleet turnover will cause region-wide MSAT levels to be significantly lower than today in almost all cases.

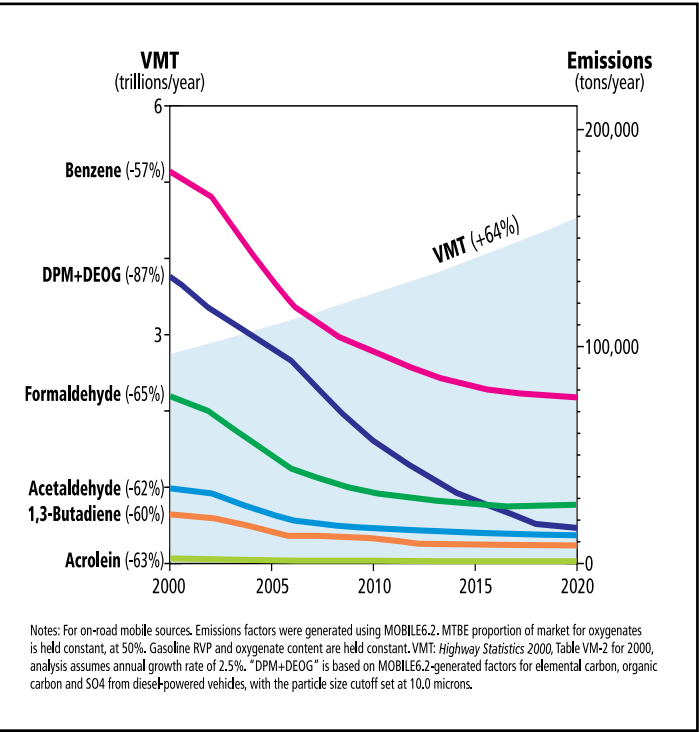
Sensitive receptors include facilities most likely to contain large concentrations of the more sensitive populations, such as hospitals, schools, licensed day care facilities, and elder care facilities. Dispersion studies have shown that the roadway air toxics start to drop off at a distance of about 100 meters (328 feet). By 500 meters (1640 feet), most studies have found it very difficult to distinguish the roadway from background toxic concentrations in any given area.

Available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives analyzed for this project. Therefore, it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

Emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce MSAT emissions by 57 to 87 percent between 2000 and



Figure IV-14: Vehicle Miles Traveled versus Mobile Source Air Toxics



2020 (**Figure IV-14**). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in nearly all cases.

MSAT Analysis Results

This section has provided a qualitative analysis of MSAT emissions relative to the various alternatives, and has acknowledged that the project build alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain. Because of this uncertainty, the health effects from these emissions cannot be estimated.

I. Noise and Vibration

This section summarizes the evaluation of noise impacts predicted to occur as a result of the implementation of Alternatives 6A/B or 7A/B along the I-270/US 15 highway corridor and on the proposed CCT alignment. Following the introduction and overview, highway noise criteria and methodology are provided. Existing noise levels and predicted traffic noise impacts for noise sensitive areas are summarized on **Figure IV-15**. A summary of potential traffic noise mitigation at locations where an impact would occur completes the highway noise portion. A summary of transit noise methods, existing noise, impacts and mitigation follows, with a visual of transit noise impacts included on **Figure IV-15**. A summary of the transit vibration analysis, including methodology, ambient conditions, predicted impacts and mitigation completes the section.

Construction of additional capacity on I-270/US 15, construction of the CCT and the operation of either buses or light rail vehicles has the potential to increase noise levels in sensitive locations throughout the length of the corridor. To determine these potential increases, existing noise levels were measured according to procedures described in *Sound Procedures for Measuring Highway Noise* (Report Number FHWA-DP-45-1R May 1996) and in *Transit Noise and Vibration Impact Assessment* (May 2006). Highway noise impacts were evaluated in accordance with FHWA and SHA *Traffic Noise Criteria* (2007), using the FHWA Traffic Noise Model (TNM version 2.5). Transit noise and vibration analyses were performed in accordance with FTA *Transit Noise and Vibration Assessment Guidelines* (2006), WMATA *Construction Noise and Vibration Design Criteria* (2001), and FTA *Construction Noise Impact Criteria* (2006). Further information and technical data associated with this noise analysis can be found in the January 2008 *Noise and Vibration Technical Report* (NVTR).

Overview

Factors affecting sounds perceived as noise include the actual level of noise, the frequency, exposure time, interval, and the fluctuations in the noise levels during exposure. Distance, time of day, intervening buildings

Table IV-31: Noise Abatement Criteria for Highway Projects\*

ACTIVITY CATEGORY	DBA* LEQ (1HR)	DESCRIPTION OF ACTIVITY
A	57	Lands on which serenity and quietness of extraordinary significance serve an important public purpose and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	67	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	72	Developed lands, properties, or activities, not included in Categories A or B.
D	—	Undeveloped lands.
E	52	Interior spaces of Category B, where applicable.

Source: Federal Highway Administration 23 CFR 772  
\*Approach noise abatement criterion in Maryland is 1 dBA less than the noise abatement criteria levels shown.

and/or vegetation, and height differences (topography) between the roadway and receiver also influence the noise level. The principal source of existing noise throughout most of the corridor is motor vehicles. Most of the community areas directly adjacent to the proposed transit alignment are already exposed to at least moderate levels of traffic noise from nearby roadways.

Highway noise is measured in decibels. To account for human sensitivity to noise, decibels are measured on the “A-scale”, abbreviated dBA. Generally, changes in noise levels of less than 3 dBA will be barely perceived by most listeners, while a 10 dBA change normally is perceived as a doubling of noise levels. The general principle on which most noise acceptability criteria is based is that a change in noise is likely to cause annoyance wherever it intrudes upon the existing, or ambient, noise from all other sources.

Noise levels for highway and transit vehicle impacts are described using equivalent sound level ( $L_{eq}$ ), which is the average sound exposure over a one-hour period. Transit impacts are also measured using day-night sound level ( $L_{dn}$ ), which is the average day and night noise level over a 24-hour period. Day-night sound level is used where people normally sleep and there is sensitivity to nighttime sounds.

Highway Noise

Highway Noise Criteria and Methodology

Noise criteria, as they apply to highway and transit projects, provide a general determination of noise levels that would adversely impact a community. **Table IV-31** presents FHWA (23 CFR 772) and SHA Noise Abatement Criteria (NAC) for different land use categories. The NAC are considered to be maximum noise levels for outdoor activities, and for certain indoor activities. If noise levels approach or exceed the maximum, a noise impact occurs, and noise abatement will be considered. The “approach” noise abatement criterion level in Maryland is 1 dBA less than the noise abatement criteria levels shown in **Table IV-31**. A substantial increase is defined as a 10-decibel increase in noise levels over existing conditions.

Existing Highway Noise

Existing noise levels were recorded at 55 sites, or noise sensitive areas (NSAs), adjacent to the proposed highway improvements. **Figure IV-15 (Sheets 1 through 5)** shows the locations of the highway noise monitoring locations within the project study area. Highway monitoring locations (NSAs) are identified with the letter “H” and include residential, commercial, and historic buildings representative of typical uses within the corridor.

Highway noise monitoring locations are the same as described in the 2002 DEIS, with the following exceptions:



Figure IV-15: Noise and Vibration Monitoring Sites and Noise Analysis Results

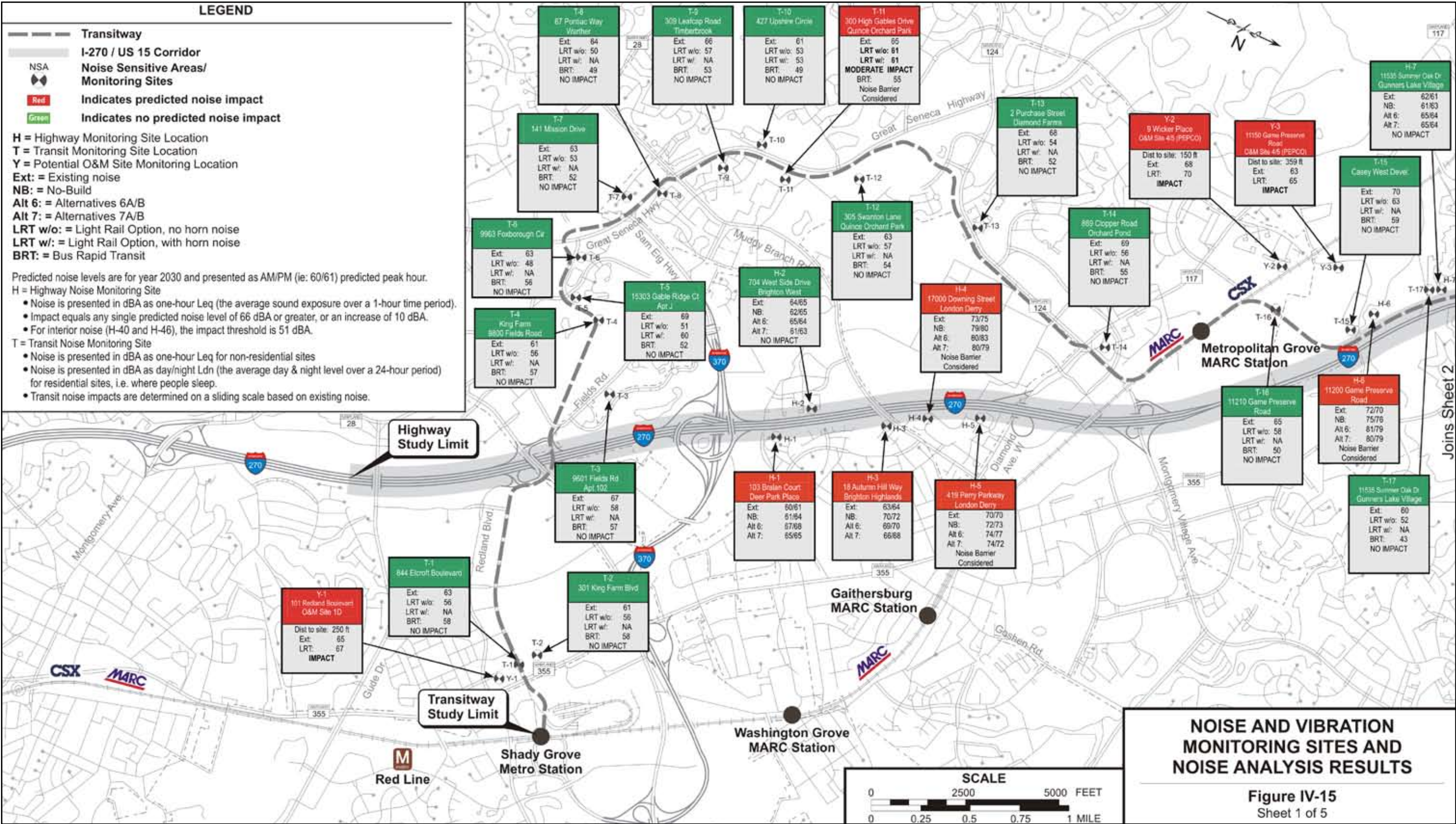




Figure IV-15: Noise and Vibration Monitoring Sites and Noise Analysis Results

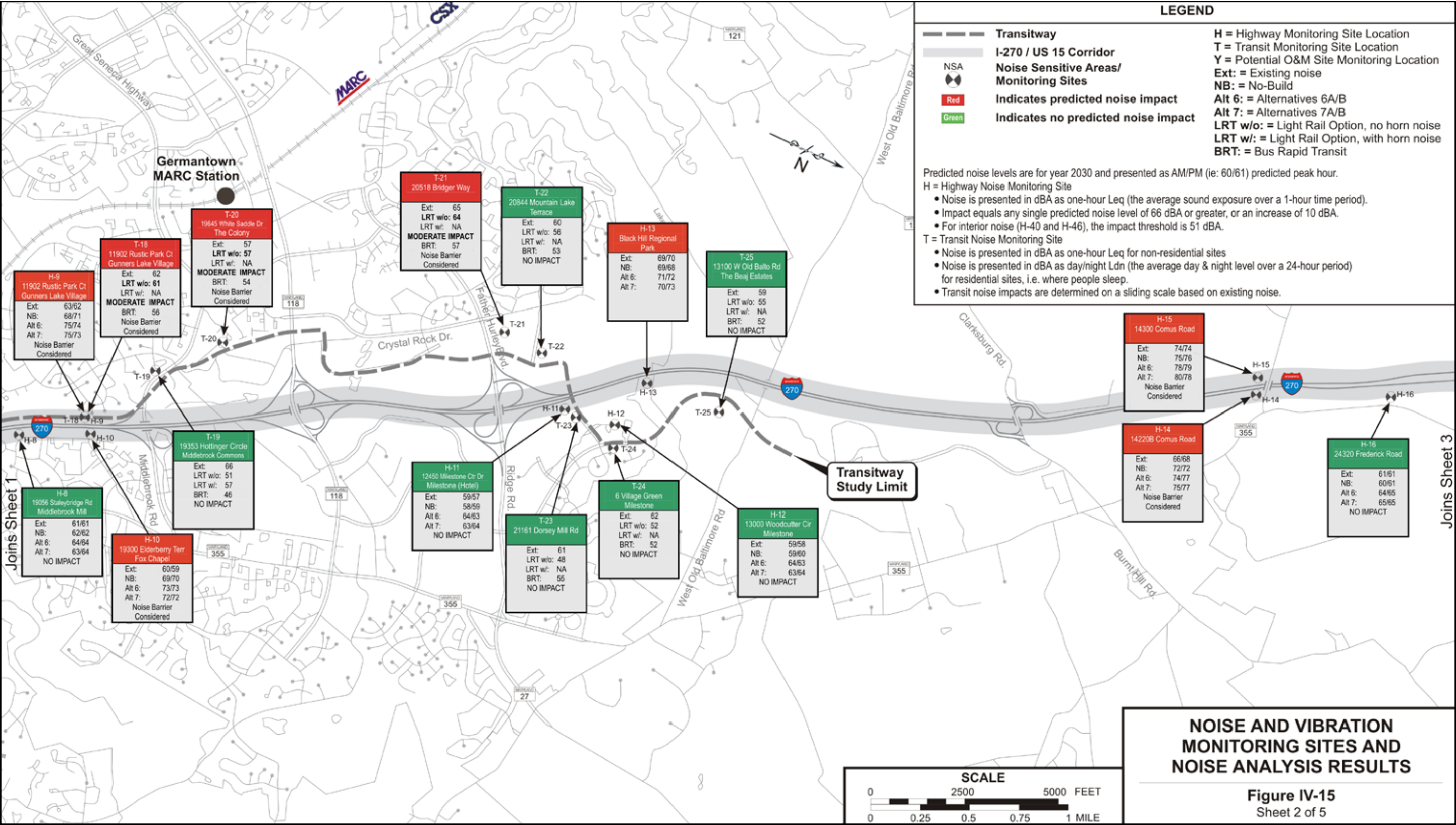


Figure IV-15: Noise and Vibration Monitoring Sites and Noise Analysis Results

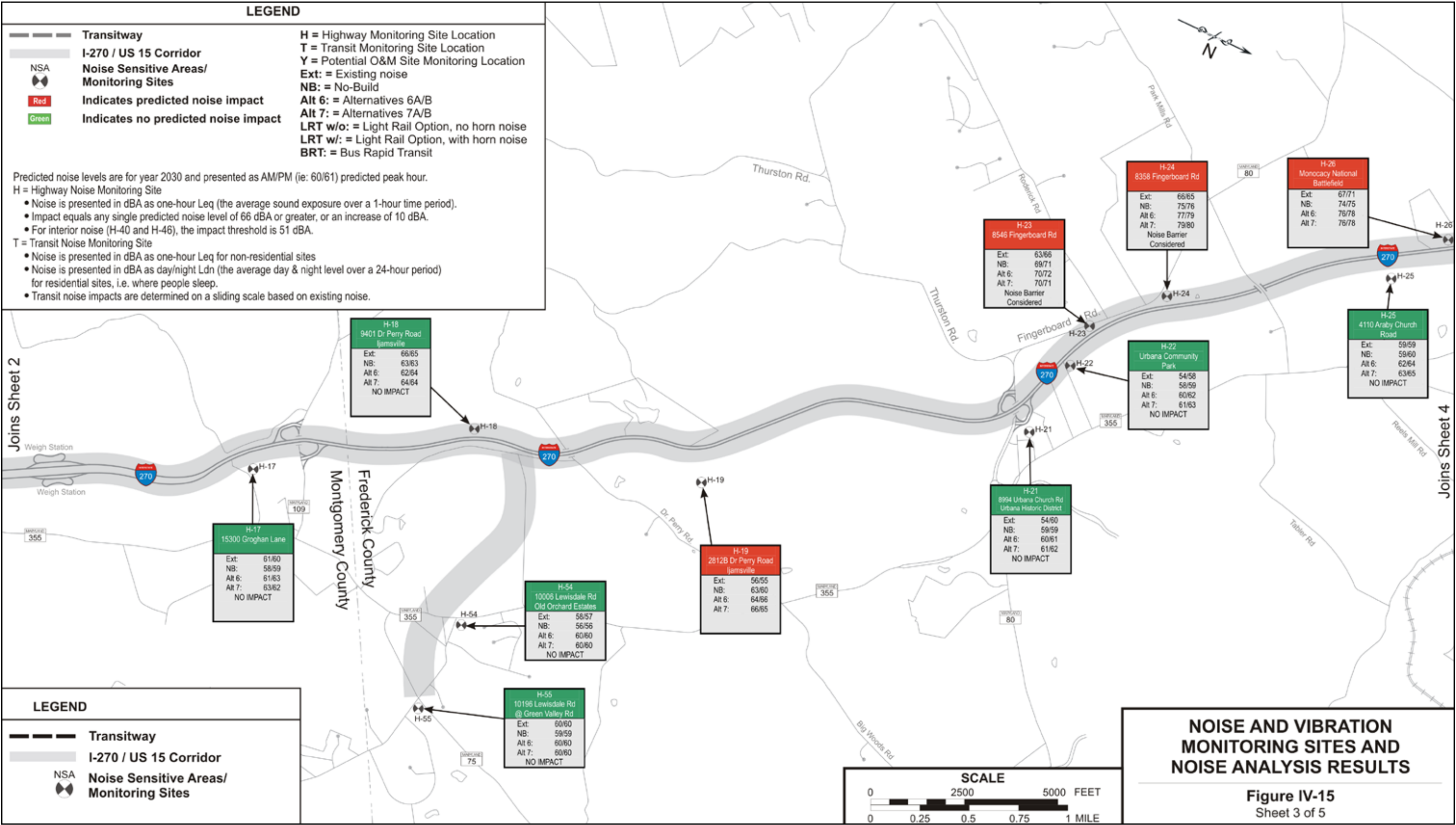




Figure IV-15: Noise and Vibration Monitoring Sites and Noise Analysis Results

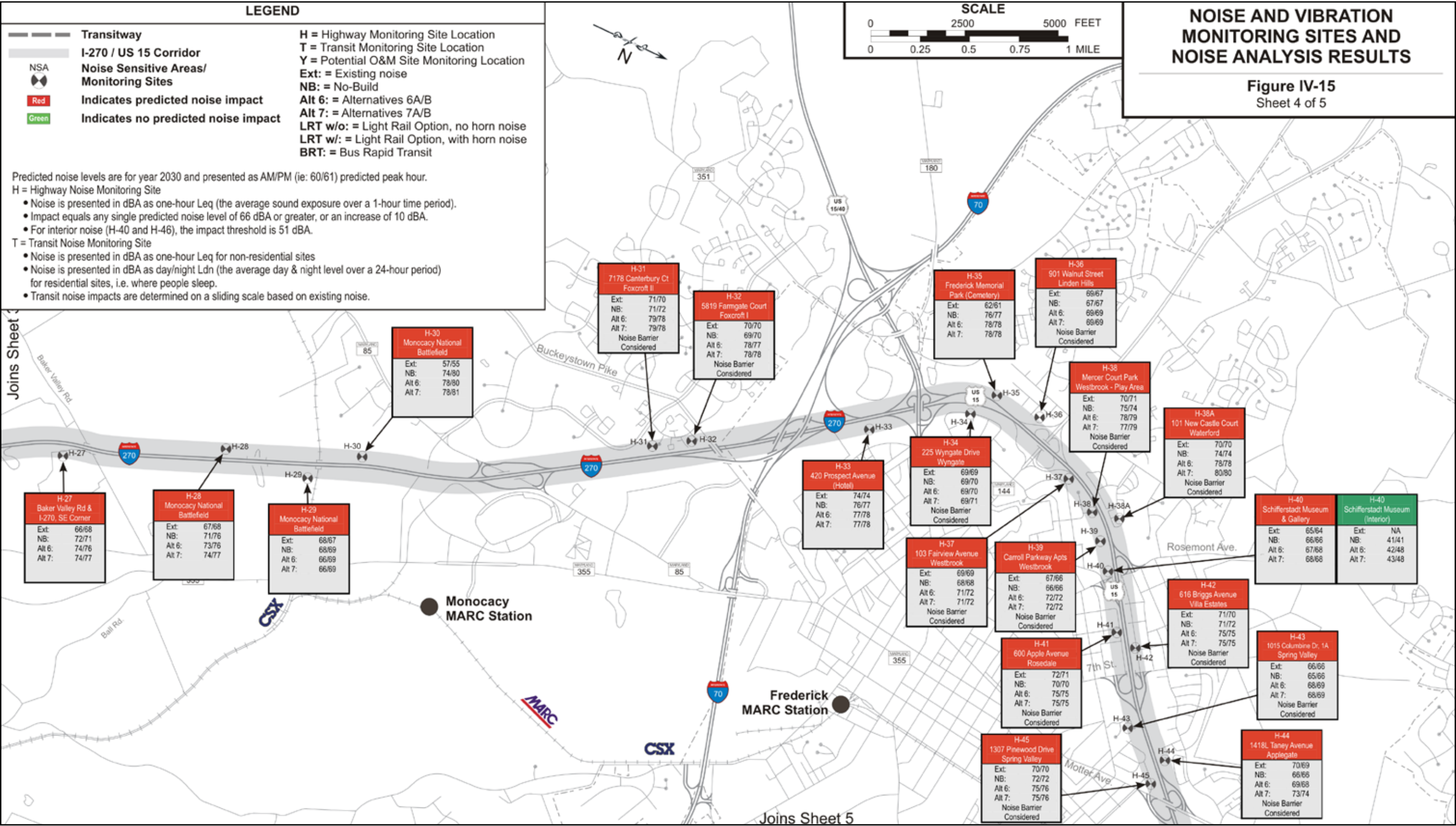
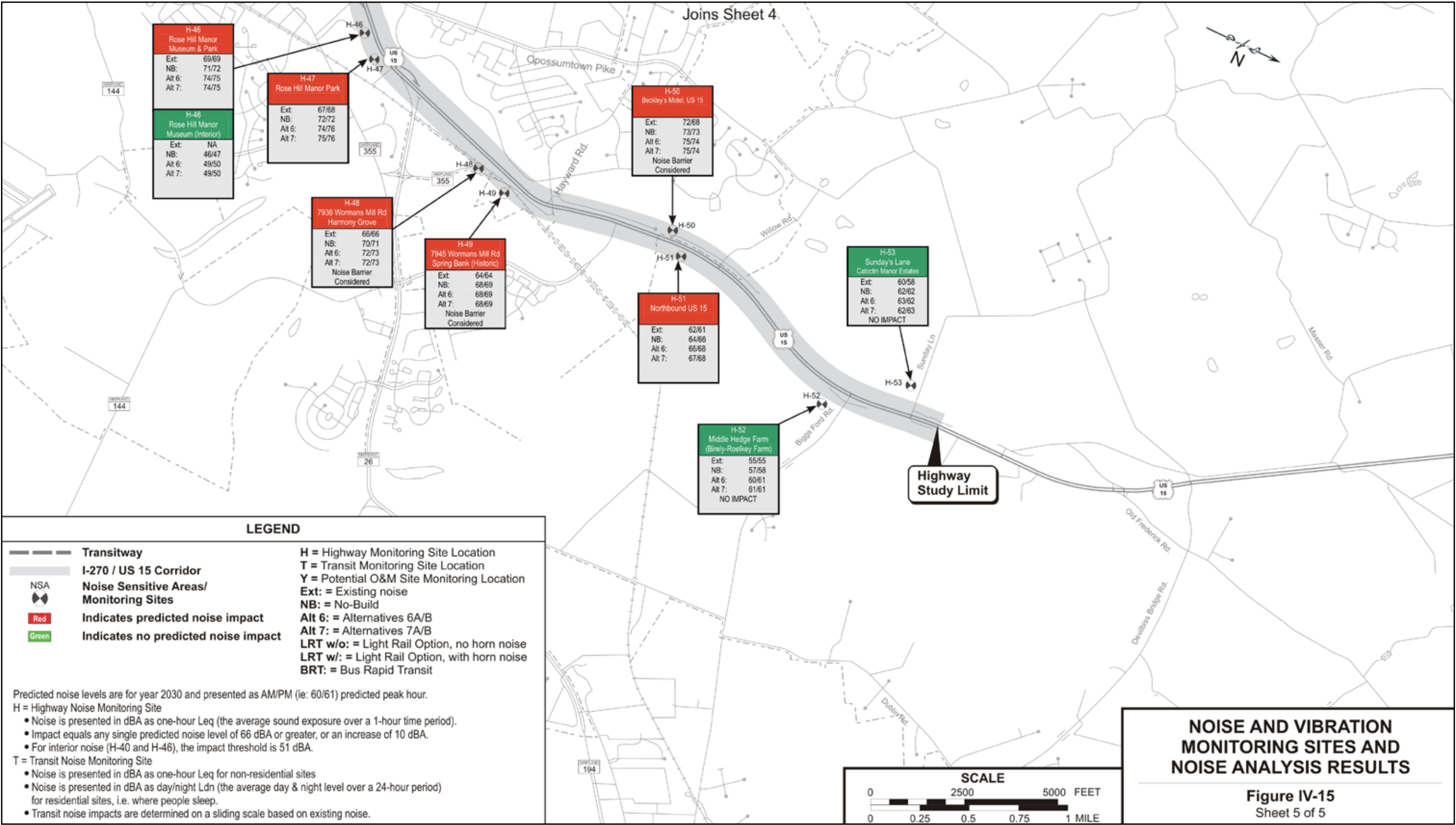


Figure IV-15: Noise and Vibration Monitoring Sites and Noise Analysis Results





- One additional representative noise monitoring location, H-38A, was identified and added to the 2006 data collection effort
- Site H-20 was removed from the study because this residential property no longer exists

Nine of the 55 highway sites are historic properties:

- Sites H-27, H-28, H-29 and H-30 are located within Monocacy National Battlefield
- Site H-21 is in the Urbana Historic District
- Site H-40 represents Schifferstadt
- Site H-46 represents Rose Hill Manor
- Site H-49 is located on the Spring Bank historic site
- Site H-52 is located on the Birely-Roelkey Farm

AM and PM period peak noise levels were measured/recorded during different alternative design stages of the project. Noise level measurements were taken during June and July, 2001, and during May and June, 2006. One measurement, collected in 1998, was not repeated for this current effort.

Traffic Noise Impacts

Figure IV-15 (Sheets 1 through 5) shows the design year 2030 predicted noise levels during morning and evening peak periods (AM/PM) for the No-Build Alternative 1 (NB) and for Build Alternatives 6A/B (Alt 6) and 7A/B (Alt 7) at all of the 55 highway sites along the proposed highway improvement corridor.

For Alternatives 6A/B, predicted year 2030 noise levels exceed the 66 dBA noise abatement criteria at 40 of the 55 representative noise monitoring locations. There are predicted noise impacts at 27 locations representing residential NSAs (nine in Montgomery County and 18 in Frederick County), with the greatest concentration occurring in the northern portion of the corridor. Noise impacts are also projected to occur at 13 non-residential NSAs, including parks (H-13, H-38, & H-47), a hotel (H-33), the Monocacy National Battlefield (H-26 through H-30), a cemetery (H-35), one historic site formerly used as a bed and breakfast (H-49), and two historic sites being used as museums (H-40, H-46). At NSAs H-9, H-10, H-19, H-24, H-30, and H-35, noise level increases of 10 dBA or more over existing conditions are predicted for at least one peak hour time period.

For Alternatives 7A/B, predicted year 2030 noise levels exceed the 66 dBA noise abatement criteria at 39 of the

55 representative noise monitoring locations. There are predicted impacts at 26 locations representing residential NSAs (eight in Montgomery County and 18 in Frederick County), with the greatest concentration also occurring in the northern portion of the corridor. Noise impacts are also projected to occur at 13 non-residential noise sensitive land uses, including parks (H-13, H-38, & H-47), a hotel (H-33), the Monocacy National Battlefield (H-26 through H-30), a cemetery (H-35), one historic site formerly used as a bed and breakfast (H-49), and historic sites used as museums (H-40, H-46). At NSAs H-9, H-10, H-19, H-24, H-30, H-35, and H-38A, noise level increases of 10 dBA or more over existing conditions are predicted for at least one peak hour time period.

The impact of the alternatives on indoor noise levels was also evaluated at two locations within the project area. Rose Hill Manor (H-46) and Schifferstadt (H-40) are both historic sites operating as museums and frequently offer indoor programs with open windows. The two sites were assessed as indoor spaces where frequent human activity occurs as described by the FHWA Category E land use as shown in Table IV-31. At a Category E land use site, noise impact occurs when interior noise levels exceed 51 dBA. Although both museums have some central or window air conditioning, programs are held inside during milder weather with open windows. With open windows, interior noise levels would exceed the FHWA Category E impact at both locations, and mitigation would be considered. None of the predicted closed-window interior noise levels exceeds the 51 dBA threshold, based on an average 25 dBA noise reduction that can be expected to occur as traffic noise transmits through double glazed windows. Under these conditions, future build interior noise levels estimated at the two museums would be below the FHWA Category E impact threshold. Estimated interior noise levels with windows closed at these two sites are shown on Figure IV-15 (Sheets 4 and 5).

Traffic Noise Mitigation

Locations that showed traffic noise impacts were considered for mitigation and are shown on Figure IV-15 as red monitoring locations. Primary consideration is given to outside areas that are frequently used, where a lowered noise level would be of benefit. In these areas, a reasonable effort should be made to obtain substantial noise reductions.

Alternative abatement measures were evaluated to determine their effectiveness in substantially reducing the predicted design year noise levels in exposed segments of the project corridor. These measures include:

- Traffic management measures
- Alteration of roadway horizontal or vertical alignments
- Acquisition of undeveloped property for use as buffer zones
- Construction of noise barriers within the right-of-way

Traffic management measures include enforcing lower speed limits and/or limiting the highway to automobiles and medium trucks. Speeds would have to be lowered 15 to 20 mph to achieve a noticeable (5 dBA) reduction. For interstate highways and access-controlled expressways, such restrictions would not be practical.

Alteration of roadway alignment is not practical because the project involves improvements to an existing alignment. Acquisition of property for buffer zones can reduce noise impacts, where unimproved property exists between noise sensitive receptors and the corridor. No such opportunity exists along the affected segments of the project corridor.

Consequently, the only reasonable available abatement measure for the I-270 project consists of erecting noise barriers within the right-of-way. Noise abatement measures should be feasible and reasonable in that they provide a substantial reduction in noise levels and can be implemented at a reasonable cost.

SHA noise abatement policy states that the decision to provide noise barriers will be made after an evaluation of the feasibility and reasonableness of constructing each barrier. Barriers that meet all of SHA’s feasibility and reasonableness criteria will be approved for consideration. The SHA noise abatement policy guidelines for this project are summarized in Table IV-32. Noise barriers were evaluated at each appropriate location. Noise barrier implementation will be finalized during and prior to final project engineering.

For areas which do not meet all of the feasibility and reasonableness criteria, alternative mitigation will be considered on a case-by-case basis consistent with Federal guidelines. Alternative mitigation could include soundproofing of publicly-owned noise sensitive structures with interior noise levels equal to or exceeding 52 dBA,

Table IV-32: SHA Criteria for Determination of Feasibility and Reasonableness of Noise Abatement

FEASIBILITY CRITERIA
1. Noise levels can be reduced by 7 dBA or more at impacted receptors
2. Placement of a barrier will not restrict pedestrian or vehicular access
3. Construction of a barrier will not cause safety or maintenance problems
4. Noise barrier can be constructed given topography, drainage, utilities, etc.
5. Noise barrier will not have significant adverse impact on Section 4(f) resource
6. There are no non-highway noise sources that would reduce barrier effectiveness
REASONABLENESS CRITERIA
1. Majority of impacted receptors will receive a 7 dBA or greater noise reduction
2. 75% or more of impacted and benefited residents approve of the proposed noise abatement
3. A 3dBA or greater change in design year build noise levels over design year no build noise levels is expected to result from the proposed action
4. The cumulative effects of highway improvements in the design year build noise levels at receptors that existed when prior improvements were made is equal to or greater than 3 dBA.
5. Noise levels equal or exceed 72 dBA at impacted receptors
6. Noise barriers will not have significant negative visual impact at impacted receptors
7. The cost of noise abatement is equal to or less than \$100,000 per residence, impacted and benefited
8. There are special circumstances, i.e. historical/cultural significance at this NSA.



Table IV-33: FTA Guidelines Land Use Categories and Metrics for Transit Noise

LAND USE CATEGORY	NOISE METRIC (DBA)	DESCRIPTION OF LAND USE CATEGORY
1	Outdoor $L_{eq}(h)^*$	Tracts of land where quiet is an essential element in their intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use.
2	Outdoor $L_{dn}$	Residences and buildings where people normally sleep. This category includes homes, hospitals and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.
3	Outdoor $L_{eq}(h)^*$	Institutional land uses with primary daytime and evening use. This category includes schools, libraries, and churches where it is important to avoid interference with such activities as speech, meditation and concentration on reading material.

\*  $L_{eq}$  for the noisiest hour of transit-related activity during hours of noise sensitivity.

purchasing impacted residences, or installing landscape screening or privacy fencing.

Twenty-six noise barrier locations (15 high-density residential areas and 11 low-density residential areas) were evaluated for feasibility and reasonableness following SHA 2006 noise abatement policy guidelines. A summary of the noise abatement analysis indicates that:

- Under Alternative 6A/B, 20 out of 25 evaluated noise barrier locations satisfied SHA feasibility and reasonableness requirements, benefiting a total of 466 dwellings.
- Under Alternative 7A/B, 19 of 25 evaluated noise barrier locations satisfied SHA feasibility and reasonableness, benefitting a total of 449 dwellings.

The estimated noise reduction with a barrier at most receptor locations ranges between 8 and 15 dBA. Potential highway noise barrier locations are depicted on the *Plan Sheets* in **Appendix A**.

For those locations identified on *Figure IV-15* where predicted year 2030 noise levels exceed the 66 dBA noise abatement criteria but are not identified as considered for noise barriers, one or more of the SHA criteria for feasibility and reasonableness was not met. These locations include: H-13, H-19, H-26 through H-30, H-33, H-35, H-40, H-46, H-47 and H-51. Locations H-1 and H-3 already have a noise barrier wall in place.

For those locations where there are special circumstances (Criterion 8), SHA will consider noise abatement when

the usual feasibility and reasonableness criteria are not met. Receptors H-27, H-28 and H-30 represent areas in Monocacy National Battlefield where quiet is an important cultural feature. Areas of the battlefield adjacent to I-270 will be considered for alternative methods of noise abatement to reduce noise impacts as consultation continues. Receptors H-40 and H 46 represent historically significant structures (Schifferstadt and Rose Hill Manor) where noise impacts would interfere with historically-oriented outdoor programs held there. For these properties, SHA has developed a “counts as ten residences” approach to determining cost effectiveness, where the noise barrier cost is divided by ten. The owners of both Schifferstadt and Rose Hill Manor would consider a noise barrier appropriate to reduce noise for outdoor activities. Further consultation will determine whether noise barriers or alternative mitigation would be considered.

Transit Noise and Analysis

Transit Noise Criteria and Methodology

FTA provides similar guidance regarding noise impacts, as shown in *Table IV-33*. The FTA noise impact criteria were used to assess impacts at sensitive sites near the proposed transit facilities. FTA guidelines assess noise impacts for various land use categories using different noise metrics ( $L_{eq}$  or  $L_{dn}$ ).

The FTA noise impact criteria assesses potential transit noise impacts by comparing the existing outdoor noise

levels ( $L_{eq}$  or  $L_{dn}$  depending on land use category) with the noise generated solely by the transit noise source. Project impacts are categorized as “No Impact”, “Moderate Impact”, or “Severe Impact” as determined from the increase in project noise over existing ambient noise levels for each of the three primary land use categories.

Existing Noise in the CCT Corridor

Noise monitoring within the proposed transit corridor was performed at 25 representative residential locations (FTA Category 2) for a continuous duration of 24 hours to determine the average day-night  $L_{dn}$  noise level at each location. Field measurements were taken between June 25 and August 7, 2001, on September 30, 2005, and between May 15 and June 2, 2006. *Figure IV-15 (Sheets 1 and 2)* depicts the locations of the transit noise monitoring sites along the CCT corridor. Monitoring locations are identified with the letter “T”. Fifteen of the sites are the same as those monitored in the 2002 DEIS, and an additional ten sites were added for this study. No additional sensitive receptor sites were identified near any of the new proposed O&M facilities to warrant consideration in this transit impact assessment. Three O&M location sites (identified as Y-1, Y-2 and Y-3 on *Figure IV-15*) were evaluated in the 2002 DEIS and are included in this study.

Measured day-night ( $L_{dn}$ ) noise level conditions at or below 63 dBA were recorded at 14 of the 25 noise monitoring locations scattered throughout the transit corridor. Within the proposed transit corridor, day-night levels range from a low measured level of 57 dBA at site T-20 to a maximum  $L_{dn}$  level of 70 dBA at site T-15. The existing 24-hour, day-night noise level measurements are shown on *Figure IV-15 (Sheet 1)*.

Two of the currently proposed O&M sites, the Redland Road Site in the Shady Grove Area and the PEPCO Site in the Metropolitan Grove Area, were evaluated for noise, as they are within 350 feet of residential land uses. The measured noise levels, shown on *Figure IV-15 (Sheet 1)* as Y-1 (Redland Road Site) and Y-2 and Y-3 (PEPCO Site), are typical of outdoor noise levels near moderate to heavy traffic on nearby roads.

Transit Noise Impacts

*Figure IV-15* shows the design year 2030 predicted noise levels for LRT on the CCT with (LRT w/) and without (LRT w/o) horn noise and for the BRT at the 25 transit monitoring locations. Horn noise impact assessment was completed at sites T-5, T-10, T-11, T-19 and T-20, located within 1,000 feet of proposed at-grade crossings. Noise impacts were determined by applying the FTA guidelines contained in *Transit Noise and Vibration Impact Assessment* (FTA, May 2006).

Noise impacts from LRT operations with or without horn noise are projected to occur at four residential properties (T-11, T-18, T-20 and T-21) within the transit corridor. These four impacted properties were determined to be within the FTA “Moderate Impact” classification. Horn noise contributions will not cause any additional impacts to occur at sites where horn noise contribution is a factor.

No noise impacts were predicted for the BRT option.

At the O&M facilities, the principal sources of noise that are likely to generate annoyance in residences nearby include moving transit cars with auxiliary equipment; trains negotiating tight curves (wheel squeal noise); car wash facilities; pings, clicks and bangs which occur as the wheels pass through switches and over frogs and joints in the special track work included in the yard; train car coupling impacts; maintenance and storage operations; and the outdoor public address system. These sources produce randomly occurring noises that are of considerably different character than typical community background noise, and therefore, if higher than the background noise level, they can be noticeable and intrusive. Most of the noises produced by the transit vehicles are controlled to a level that would avoid impact on adjacent areas unless the separation distance from the O&M facilities with the residential area is small (less than 300 feet).

*Table IV-34* indicates typical train noise levels expected from two-car trains stopped or moving on tangent yard tracks, with and without sound barrier walls, at 50, 100, 300, and 600 feet. At receptors Y1, Y2, and Y3, train noise levels alone in the O&M facilities will be considerably reduced, even without a noise wall, and in all cases, they will satisfy the allowable maximum noise limits in residential areas, where train noise levels will be masked by the existing noise from traffic and other community sources.





Table IV-34: Noise Levels from Two-Car Trains Operating on Yard Tracks

NOISE SOURCE	DISTANCE FROM TRACK CENTERLINE (NOISE MEASURED IN L <sub>DN</sub> )			
	50 FT	100 FT	300 FT	600 FT
Car Stationary Auxiliaries Operating	61	57	47	41
Train Moving at 20 mph Aerial Structure – No Shielding – With Sound Barrier Wall	73 68	69 64	60 55	54 49
Ballast and Tie – No Shielding – With Sound Barrier Wall – Deep Cut	70 62 55	66 58 51	57 49 42	51 43 36

Maintenance activities will be performed inside enclosed buildings, and noise from the indoor maintenance activities is not expected to impact residential properties. Outdoor maintenance operations will produce random noises in addition to the noise of moving transit vehicles. After applying distance correction from the site boundary, total noise from all of the O&M activities is estimated at 67 L<sub>dn</sub> at Y1, 70 L<sub>dn</sub> at Y2, and 65 L<sub>dn</sub> at Y3, and therefore will result in noise impacts at all three sites.

Transit Noise Mitigation

In conjunction with the FHWA, the FTA has issued a regulation implementing the NEPA general policy on environmental mitigation, which states that measures necessary to mitigate adverse impacts are to be incorporated into the project. While NEPA provides broad direction, a more explicit statutory basis for mitigating adverse impacts is contained in the federal transit laws. Before approving a construction grant under Section 5309, FTA must make a finding that “...the preservation and enhancement of the environment, and the interest of the community in which a project is located, were considered; and no adverse environmental effect is likely to result from the project, or no feasible or prudent alternative to the effect exists and all reasonable steps have been taken to minimize the effect.”

Mitigation of noise impacts from rail projects may involve treatments at three fundamental components of the noise problem:

- At the noise source
- Along the source-to-receiver propagation path
- At the receiver (generally, the transit agency has the authority to treat the source and some elements of the propagation path, but may have little or no authority to modify anything at the receiver end)

Practical noise mitigation measures that are employed in reducing noise from train operations are summarized in the *FTA Guidance Manual Transit Noise and Vibration Impact Assessment* (May 2006).

Mitigation options include the following:

- Select quieter system-wide components such as continuous welded rail, tie and ballast track work, resilient wheels, and skirts on the vehicle to reduce equipment noise
- Tailor operation plans to provide reduction in noise and vibration levels such as reducing vehicle speed, eliminating bells at at-grade crossings, and maintaining vehicles properly
- Add design features such as noise barriers if adequate space is available; lubricate track at curves, employ track-bed isolation, and use moveable point switch frogs

Based on the minor level of noise impact predicted to occur under the proposed LRT alternative, mitigation measures required to eliminate these impacts can be accomplished by implementing one or more of the abatement measures outlined above. The noise abatement strategies investigated to accomplish these goals are discussed in greater detail in the 2008 NVTR.

The major source of wayside rail noise at moderate to high operating speeds is wheel-rail noise. An effective method to control wheel-rail noise is to construct noise barriers along the track at close distance to the track. The performance of noise barriers depends on the relative heights of the noise source, the barrier type, and the sensitive area. The typical wheel-rail noise reduction ranges from 5 to 15 dBA. Barriers typically perform better in higher speed operating areas, where wheel-rail noise

Table IV-35: FTA Ground-borne Vibration Impact Criteria<sup>1</sup>

LAND USE CATEGORY	VIBRATION VELOCITY IMPACT LEVELS		NOISE IMPACT LEVELS	
	FREQUENT EVENTS <sup>2</sup>	INFREQUENT EVENTS <sup>3</sup>	FREQUENT EVENTS <sup>2</sup>	INFREQUENT EVENTS <sup>3</sup>
Category 1: Buildings where low ambient vibration is essential for interior operations	65 VdB <sup>4</sup>	65 VdB <sup>4</sup>	NA <sup>5</sup>	NA <sup>5</sup>
Category 2: Residences and buildings where people normally sleep	72 VdB	80 VdB	35 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use	75 VdB	83 VdB	40 dBA	48 dBA

<sup>1</sup> Vibration levels expressed in VdB are 1 micro inch/sec and noise levels in dBA.  
<sup>2</sup> “Frequent Events” is defined as more than 70 vibration events per day. Most rapid transit projects fall into this category.  
<sup>3</sup> “Infrequent Events” is defined as fewer than 70 vibration events per day. This category includes most commuter rail systems.  
<sup>4</sup> This criterion limit is based on levels that are acceptable for most moderately sensitive equipment such as optical microscope.  
<sup>5</sup> Ground-borne noise criteria are generally applicable to vibration generated by wheel-rail interaction in rail systems.

dominates.

Train noise barriers are evaluated based upon the SHA criteria identified in *Table IV-32*. Train noise barriers meet all SHA criteria for NSAs T-11, T-18, T-20 and T-21 and will be considered prior to and during final design of the transit system, if an LRT option is selected.

Though the O&M activities’ noise levels would generally be acceptable during the daytime at most of the residential sites, noises would be unacceptable during nighttime. Mitigation measures include limiting noise-producing O&M activities to daytime hours. However, some of the O&M noise, such as wheel squeal and switch frog noise, are known to generate high levels of pure tone and impulse noise with distinguishable audible characteristics, and could be annoying to residents within 350 feet. Mitigation methods that could be considered to reduce noise from wheel squeal and switch frogs include wheel and rail lubrication and using spring frogs or moveable point frogs.

Vibration Analysis

Vibration Criteria and Methodology

The objective of this analysis is to evaluate vibration effects of Alternatives 6A/B and 7A/B on the adjacent community and the ability to avoid, minimize or mitigate predicted impacts that may occur as a result of transit improvements (LRT or BRT on the CCT alignment, stations, and potential O&M facilities). *FTA Transit Noise*

*and Vibration Impact Assessment* (FTA-VA-90-1003-06, 2006) procedures were used to predict transit generated noise and vibration levels. For additional information, refer to the 2008 NVTR.

FTA uses vibration criteria to measure potential vibration impacts generated by a transit project. FTA guidelines apply to transit vehicles operating on the transit corridor, near stations and near other supporting transit facilities. The criteria are based on the maximum vibration levels in decibels (vibration decibels or VdB) for three land use categories generated by a single pass-by event. *Table IV-35* provides FTA ground-borne vibration criteria for different land uses.

Vibration noise levels were evaluated at the same 25 locations throughout the CCT corridor as was noise.

Existing Vibration Environment

The major sources of vibration in the transit corridor are those generated predominately from automobiles, trucks, and buses. Typical velocity levels generated by these types of vehicles range from 50 to 60 vibration decibels (VdB) and are well below the threshold of annoyance.

Vibration Impacts and Mitigation

No vibration impacts were identified at any location analyzed. No mitigation is required.

## J. Visual Quality



I-270 at the southern end of the study area



I-270 in Montgomery County adjacent to Little Bennett Park

Visual Impact Assessments are routinely performed on projects to ascertain the effects of proposed projects on the visual environment, including the natural, historic, and human environments. Visual quality is one of many resources protected by the NEPA of 1969 and the CEQ regulations that support NEPA implementation.

This section examines the relationship of the proposed improvements to the I-270/US 15 corridor in relation to the visual quality and character of the corridor environment. The section begins with a description of the existing visual qualities of the corridor and follows with a discussion of visually sensitive areas – areas of particular interest as they pertain to potential impacts by the proposed project alternatives. Lastly, the section describes potential impacts and opportunities for mitigation by the proposed highway and transit alternatives.

### Existing Visual Quality

The existing visual character of the area surrounding the I-270/US 15 Corridor has not changed substantially from that described in the 2002 DEIS (see pages III-305 to III-312). The visual landscape varies considerably, from the largely rural settings of the northern portion of the study area to the highly developed suburban landscapes found in the southern portion of the study area. Large, mixed-use developments, such as those in downtown Germantown adjacent to the transit center, were constructed after 2002 and have altered the visual landscape. In other areas, new office, residential and commercial developments are being planned or are under construction. These will similarly change the visual landscape by the time this project would be developed. This would include new developments anticipated near the Metropolitan Grove and Washingtonian stations.

### Visually Sensitive Areas

Visually sensitive areas are defined as those where viewers are likely to notice changes within the viewshed. In general, areas of high visual sensitivity within the corridor include the following:

- *Parks, Trails, and Natural Areas* – Development within or near these areas is generally more likely to be noticed than development in more urbanized environments.
- *Historic Resources* – Development adjacent to, or on, historic properties may have visual effects if it obstructs or obscures views of historic structures, or includes new design elements that are not complementary with the style, scale, or proportion of the surroundings.
- *Design Sensitive Areas* – Development in design sensitive areas, such as residential communities and “Main Street” style streetscapes, could have visual effects if it is inconsistent with the existing design theme, scale, or proportion within the area.

### Visual Impacts and Mitigation

The 2002 DEIS presented the potential impacts of the project on visually sensitive areas. Alternatives 6A/B and 7A/B are expected to have similar impacts as those described within the DEIS for Alternatives 3A/B, 4A/B, and 5A/B/C (see pages III-313 to III-320).

The visual impact of a proposed transportation project varies considerably, depending on the existing character of the natural and built environment and the design elements of the proposed transportation system.

The introduction of new transportation systems often causes visual impacts. For example, the I-270/US 15 project includes new highway lanes, interchanges, bridges, and electronic toll collection infrastructure. All have the potential to alter the visual environment. The infrastructure associated with the transitway, which varies by mode, would affect the visual environment differently. For example, an LRT system includes catenary wires and poles that are not components of a BRT system. Vehicle types and design, station designs, park and ride lots, maintenance facilities and the guideways all have elements that will alter the visual landscape.



US 15 at Biggs Ford Road

Negative impacts would occur in places where proposed facilities would detract from, or obstruct, the view of existing visually sensitive areas. Mitigation measures would be implemented, where appropriate, for addressing these impacts. Mitigation measures could include landscaping and tree replacement to reduce the visual effects of the transportation system. In addition, the design of transit stations and facilities, bridges and other structures would use materials, colors, and other features to integrate into the surrounding landscape as much as possible.

The proposed highway and transit improvements have the potential to enhance existing areas of low visual quality within the corridor. The addition of transportation structures with a high quality design and landscaping would improve existing low visual quality areas by removing derelict structures, debris, or overgrown vegetation.



K. Construction and Operational Issues

This section discusses the potential for temporary impacts that could occur during the construction of a build alternative. Identifying potential construction impacts of the alternatives considered is important in understanding potential impacts to resources and to minimize impacts during construction activities. The degree of construction impacts is anticipated to be similar for all of the build alternatives, including those presented in the 2002 DEIS. Impacts to the natural and human environment that occur during construction could be related to noise, vibration, air quality, and changes to traffic patterns. In addition to the information presented here, please see Pages III-321 through III-324 in the DEIS.

Construction Noise

One of the major impacts to the human environment in the vicinity of construction activities is noise. Noise impacts from construction activities are a function of:

- Noise generated by construction equipment
- The proximity of construction activities to sensitive land uses
- The duration of construction

Construction Noise Sources

Construction noise at construction sites can come from both mobile and stationary sources. Mobile equipment such as dozers, scrapers, graders, etc., may operate in a cyclic fashion, in which a period of full power is followed by a period of reduced power. Equipment such as trucks produce steady noise and are generally associated with supply of materials to construction sites and disposal of waste materials from construction sites.

Stationary equipment stays in one general area and includes items such as pumps, generators, compressors, etc. This equipment operates at a constant noise level under normal operation and is classified as non-impact equipment. Other types of stationary equipment, such as pile drivers, jackhammers, and pavement breakers, or blasting operations produce variable and sporadic noise levels and produce impact-type noises. Blasting operations are not expected during the project construction.

Table IV-36: Construction Equipment Noise Emission Levels

EQUIPMENT	TYPICAL NOISE LEVEL (dBA) 50 FT FROM SOURCE
Air Compressor	81
Backhoe	80
Ballast Equalizer	82
Ballast Tamper	83
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Concrete Vibrator	76
Crane, Derrick	88
Crane, Mobile	83
Dozer	85
Generator	81
Grader	85
Impact Wrench	85
Jackhammer	88
Loader	85
Paver	89
Pile Driver (Impact)	101
Sonic	96
Pneumatic Tool	85
Pump	76
Rail Saw	90
Rock Drill	98
Roller	74
Saw	76
Scarifier	83
Scraper	89
Shovel	82
Spike Driver	77
Tie Cutter	84
Tie Handler	80
Tie Inserter	85
Loader	85
Paver	89
Truck	88

Source: FTA Guidance Manual for Transit Noise and Vibration Impact Assessment, May 2006.

Table IV-37: WMATA Construction Noise Specifications

AFFECTED STRUCTURE OR AREA	MAXIMUM ALLOWABLE CONTINUOUS NOISE LEVEL (dBA)	
	DAYTIME	NIGHTTIME
Single Family Residential	60	50
Multifamily residential including hospitals or residential along an arterial	65	55
In semi-residential/commercial areas including hotels	70	60
In semi-residential/commercial areas including schools	70	65
In commercial areas with no nighttime residency	75	70
Industrial – All locations	80	80

Table IV-38: Intermittent Noise

AFFECTED STRUCTURE OR AREA	MAXIMUM ALLOWABLE CONTINUOUS NOISE LEVEL (dBA)	
	DAYTIME	NIGHTTIME
Single Family Residential	75	60
Multifamily residential including hospitals or residential along an arterial	75	65
In semi-residential/commercial areas including hotels	80	70
In semi-residential/commercial areas including schools	80	60
In commercial areas with no nighttime residency	85	85
Industrial – All locations	90	90

Typical noise levels from construction equipment are shown in *Table IV-36*.

WMATA Construction Noise Specifications

Washington Metropolitan Area Transit Authority (WMATA) specifications establish different limits for continuous and intermittent construction noise at the affected structure or area. The WMATA construction noise specifications appear in *Table IV-37*. For stationary sources, parked mobile sources or any sources

or combination of sources producing repetitive or long-term noise lasting more than two hours, the maximum allowable noise levels are shown in *Table IV-38*.

**Intermittent Noise:** Limits shown in *Table IV-38* are applicable to noise from non-stationary mobile equipment operated by a driver or from any source of non-scheduled, intermittent, and non-repetitive, short-term noises not lasting more than two hours.



Table IV-39: Noise Emission Limits on Construction Noise

Type of Equipment	MAXIMUM NOISE LIMIT DATE EQUIPMENT ACQUIRED	
	Before 1/1/90	On or after 1/1/90
All equipment other than highway trucks, including hand tools and heavy equipment	90 dBA	85 dBA
Highway trucks in any operating mode or location	83 dBA	80 dBA

Note: Peak levels due to impact pile drivers may exceed the above noise emission limits by 10 dBA.

**Special Zones or Special Construction Site:** In areas outside of construction limits where the the contractor has obtained a designation as a Special Zone or Special Construction Site from the agency having jurisdiction, the noise limitations for buildings in industrial areas apply. In zones designated by the local agency having jurisdiction as a special zone, special premise or special facilities, such as hospital zones, the noise level and working time restrictions imposed by the agency shall apply. The contractor shall obtain these zones and work hour restrictions from the local agency.

**More Than One Limit Applicable:** Where more than one noise limit is applicable, the contractor will use the more restrictive requirement for determining compliance.

**Noise Emission Restrictions:** The contractor will use only equipment meeting the allowed maximum noise emission limits described in *Table IV-39* as measured at a distance of 50 feet from the equipment in conformity with the provisions of the latest revisions of SAEJ366b, SAEJ88, and SAEJ952b or in accordance with the measurement procedures specified in this section.

Construction Techniques and Methods

Stations, shafts, cut-and-cover tunnels and portals require very similar construction techniques. Noise from excavation associated with the cut and cover construction would include noise from construction equipment such as backhoes, bull dozers, cranes, concrete mixers, concrete delivery trucks, dump trucks, delivery trucks, front-end loaders, pile drivers and jack hammers.

CCT Construction Noise Criteria

Maryland and WMATA residential limits for continuous construction noise levels are the same and both limit daytime noise level to 65 dBA and nighttime noise level to 55 dBA. These limits are applicable for the CCT construction. For commercial areas the applicable daytime and nighttime limits are 67 dBA and 62 dBA and for industrial areas the limit is 75 dBA for both daytime and nighttime. Maryland’s maximum daytime construction noise level shall not exceed 90 dBA in all areas and maximum nighttime noise level shall be limited to 55 dBA in residential areas, 62 dBA in commercial areas, and 75 dBA in industrial areas.

CCT Construction Noise

Noise generated from CCT construction activities of either the proposed LRT and BRT alternatives would be similar. Construction noise associated with the BRT option is generally similar to highway construction noise associated with the transitway foundation. However, with the LRT option, noise would include that associated with laying trackbed and track and raising overhead structures associated with the catenary system.

Noise Control Requirements

Notwithstanding the specific noise levels already specified, the noise control measures listed below can be used to minimize, to the greatest extent feasible, the noise levels in all areas outside the construction limits.

- Use shields, impervious fences or other physical sound barriers to reduce noise
- Use sound retardant housings or enclosures around noise producing equipment

- Use effective intake and exhaust mufflers on internal combustion engines and compressors
- Line or cover hoppers, storage bins and chutes with sound absorbing material
- Do not use air or gasoline driven saws
- Conduct truck loading, unloading and hauling operations so that noise is kept to a minimum
- Route construction equipment and other vehicles carrying spill, concrete or other materials over streets and routes that will cause the least disturbance to residents
- Advise the engineer in writing of the proposed haul routes prior to securing a permit from the local government
- Subject to the approval of the engineer, place stationary equipment to minimize noise impact on the community

Construction-Generated Vibration

Construction activities have the potential for producing high vibration levels that may be perceptible. Some construction activities can generate vibration levels enough to cause architectural and structural damage. Even where vibration levels are lower or imperceptible, vibrations can produce ground-borne noise. Construction activities typically producing the highest vibration and ground-borne noise levels are those involving the use of impact equipment. The effects of ground-borne vibration may include rattling of windows, and shaking of items on shelves or hanging on walls. In extreme cases, the vibration can cause damage to buildings. The vibration of floors and walls may cause rattling of such items as windows or dishes on shelves. The vibration of building surfaces and objects within the building can also result in a low-frequency rumble noise. The rumble is the noise radiated from the vibration of the room surfaces, even when the vibration itself cannot be felt. This is called ground-borne noise.

Recognizing the possibility that some damage could occur to adjacent structures, a pre-construction survey, including a detailed photographic record of existing structures, would be conducted and restitution or repairs made based on actual damages if they are determined to be a result of construction activities.

Construction staging considerations could include limiting the hours for loading and hauling operations, stockpiling excavated materials in the excavation station during non-haul hours and the use of rubber-tired excavation equipment in lieu of tracked equipment.

Vibration Prediction Methodology

The FTA guidance manual provides some simple screening methodologies for determining where there is a significant potential for vibration impact from construction activities. Such activities include pile driving, demolition, drilling, excavation, or blasting in close proximity to a sensitive structure. The procedure includes: (1) selecting the equipment and determining the vibratory levels at a distance of 25 feet; (2) determining peak particle velocity at a receptor location using a formula that accounts for the peak particle velocity of the equipment and the distance from the receptor; and (3) if consideration of annoyance or interference with vibration-sensitive activities is of concern, estimate the vibration level and apply the vibration impact.

Source Vibration Levels for Construction Equipment

Listed in *Table IV-40* are vibration source levels from heavy construction equipment. These levels are average source levels under a wide variety of construction activities. This information can be used while predicting vibration levels at various receptor distances from the operation of construction equipment. Damage and annoyance assessment will follow the FTA procedures.

WMATA Construction Vibration Specification Limits

Damage risk criteria would be developed and applied during the construction phase of the project. Generally, annoyance effects may be expected during construction near sensitive sites within approximately 200 feet of the construction activity. Actual distances at which effects would occur will depend on the type of construction equipment used and soil characteristics in the area. In order to minimize the annoyance or interference to occupants of affected buildings, the contractor shall conduct construction activities in such a manner that ground vibration at the nearest occupied buildings does not exceed the following peak particle velocity (PPV) magnitudes in any direction:



Table IV-40: Source Levels for Construction Equipment Vibration

EQUIPMENT	PPV* AT 25 FT (in/sec)	APPROXIMATE $L_v$ AT 25 FT ** (VDB RE $10^{-6}$ in/sec)
Pile Driver (impact, upper range)	1.518	112
Pile Driver (impact, typical)	0.644	104
Pile Driver (sonic, upper range)	0.734	105
Pile Driver (sonic, typical)	0.170	93
Clam shovel drop (slurry wall)	0.202	94
Large bulldozer	0.089	87
Caisson drilling	0.089	87
Loaded trucks	0.076	86
Jackhammer	0.035	79
Small bulldozer	0.003	58

Source: *Guidance Manual for Transit Noise and Vibration Impact Assessment*, May 2006

\*Peak Particle Velocity

\*\*RMS (Root Mean Square) Velocity in decibels (VdB)

- Sustained (greater than or equal to 1hr/day) 0.03
- Intermittent (less than or equal to 1 hr/day) 0.07
- Intermittent (less than 10 min/day) 0.10

To avoid physical damage to buildings, the contractor shall conduct construction activities in such a manner that the maximum ground-borne vibration at all times does not exceed 0.2 in/sec (PPV) in any direction for buildings which are in generally sound condition. For historical monuments, the contractor shall conduct construction activities in such a manner that the ground vibration magnitude at all times does not exceed 0.12 in/sec (PPV) in any direction.

Vibration Control Requirements

Notwithstanding the specific vibration levels already specified, the contractors will use vibration control measures listed below to minimize to the greatest extent feasible the vibration levels in all areas outside the construction limits:

- Use vibratory pile drivers or auguring for setting piles in lieu of impact pile drivers
- If impact pile drivers must be used, their use is restricted to the hours from 8 AM to 5 PM weekdays in residential and in semi-residential/commercial areas

- Specify realistic vibration limits in contract documents
- Develop a monitoring program during construction
- Monitor vibrations at nearest sensitive locations throughout the construction period
- Inform people living and working in the vicinity about the construction method, possible effects, quality control measures and precautions to be used, and the channels of communication available to them

Additional vibration control plans and practices would include routing truck traffic and heavy equipment to avoid impacts to sensitive receptors, properly securing street decking over cut-and-cover excavations, scheduling work to limit nighttime impacts in residential areas, and minimizing the duration of vibration impacts.

Air Quality Construction Impacts

Construction effects of the project would be limited to short-term increased fugitive dust and mobile-source emissions. State and local regulations regarding dust control and other air quality emission reduction controls should be followed.

Fugitive Dust Emissions

Fugitive dust is airborne particles, generally of a relatively large size. Construction-related fugitive dust would be generated by haul trucks, concrete trucks, delivery trucks, and earth-moving vehicles operating around the construction sites. Fugitive dust would be caused primarily by particles that are “kicked up” by vehicles moving over paved and unpaved roads, dirt tracked onto paved surfaces from unpaved areas at access points, and material blown from uncovered haul trucks.

Generally, the distance that particles drift from their source depends on their size, the emission height, and the wind speed. Small particles (30–100 micron range) can travel several hundred feet before settling to the ground. Most fugitive dust, however, is comprised of relatively large particles (that is, particles greater than 100 microns in diameter). These particles are responsible for the reduced visibility often associated with this type of construction. Given their relatively large size, these particles tend to settle within 20 to 30 feet of their source.

In order to minimize the amount of construction dust generated, the guidelines below should be followed:

Site Preparation

- Minimize land disturbance
- Use watering trucks to minimize dust
- Cover trucks when hauling dirt
- Stabilize the surface of dirt piles, if they are not removed immediately
- Use windbreaks to prevent accidental dust pollution
- Limit vehicular paths and stabilize these temporary roads
- Pave all unpaved construction roads and parking areas to road grade for a length no less than 50 feet from where roads and parking areas exit the construction site. This prevents dirt from washing onto paved roadways

Construction

- Cover trucks when transferring materials
- Use dust suppressants on unpaved traveled paths
- Minimize unnecessary vehicular and machinery activities

- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site. An alternative to this strategy is to pave a few hundred feet of the exit road just before entering the public road.

Post-Construction

- Re-vegetate any disturbed land not used
- Remove unused material
- Remove dirt piles
- Re-vegetate all vehicular paths created during construction to avoid future off-road vehicular activities

Mobile Source Emissions

Since CO emissions from motor vehicles generally increase with decreasing vehicle speed, disruption of traffic during construction (such as the temporary lane closures and traffic back-ups) could result in short-term, elevated concentrations of CO. In order to minimize the amount of emissions generated, every effort should be made during the construction phase to limit disruption to traffic, especially during peak travel hours.

Transportation Management Plan

A Transportation Management Plan, or TMP, will be developed for this project. A TMP is a document that is used to present a coordinated transportation management strategy that will most effectively minimize the work zone impacts of a project. The contents of the TMP will include:

- Temporary Traffic Control Plans, which are used to show how traffic will be re-routed during the various stages of a project,
- Traffic Operations Plan, which identifies “intelligent transportation” initiatives that could be used to either divert traffic or move it through the work zone more effectively, and
- Public Information and Outreach Plan, which outlines the methodology for distributing project information to the public and interested stakeholders, both prior to and during the construction of the project.

It is anticipated that this project will be constructed in several segments, and each segment will have its own final TMP.

## L. Indirect and Cumulative Effects (ICE) Analysis

This section describes briefly the Indirect and Cumulative Effects (ICE) Analysis completed for Alternatives 6A/B and 7A/B, which serves as a companion to the 2002 Secondary and Cumulative Effects Analysis (SCEA) that was performed for Alternatives 3A/B, 4A/B, and 5A/B/C. The section summarizes the regulatory framework for the analysis, changes within the ICE boundary since the 2002 DEIS SCEA, and the potential indirect and cumulative effects of Alternatives 6A/B and 7A/B within the ICE boundary. The section then summarizes the conclusions of the analysis and compares the conclusions drawn from the current analysis to those of the 2002 SCEA.

### Regulatory Framework and Analytical Methods

An ICE analysis is completed to evaluate whether the project would cause additional impacts to resources because it induced changes in land use or other effects that were not planned and would not occur if the project is not completed (indirect effects). The ICE analysis also evaluates whether the project’s impacts, plus those of other actions, contribute substantially to the accumulated impacts to resources in the area that will be influenced by the project.

The ICE analysis completed for Alternatives 6A/B and 7A/B is based upon guidance from:

- Council on Environmental Quality’s (CEQ) regulations (40 CFR Sections 1500 – 1508) implementing the procedural provisions of the National Environmental Policy Act (NEPA) of 1969, as amended (42 USC Sections 4321 et seq.).
- Council on Environmental Quality 1997 guidelines, *Considering Cumulative Effects under the National Environmental Policy Act*.
- Maryland State Highway Administration’s Internal *Indirect and Cumulative Effects Analysis Guidelines*, Revised 2007.
- Federal Highway Administration Position Paper: *Secondary and Cumulative Impact Assessment in the Highway Project Development Process*, April 1992.

The CEQ regulation (40 CFR § 1508.8(b)) describes indirect, or secondary, impacts as “...caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable.”

The CEQ regulations (40 CFR § 1580.7) define cumulative effects as “...an impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonable foreseeable future actions regardless of what agency (Federal, or non-Federal) or person undertakes such other actions.”

The regulations also define the steps to be completed in performing the analysis, as described in the following sections.

### Scoping

The scoping step establishes the geographic and temporal boundaries to be considered for the analysis, the resources to be evaluated, and the analytical methods to be used.

The geographic boundary is the area within which the effects of the project might influence changes. The boundary, shown in **Figure IV-16**, was determined for the 2002 SCEA through overlaying a series of area maps including the project study area, transportation analysis zones, census tract boundaries, watersheds and sub watersheds, water and sewer service limits, Priority Funding Areas, and areas of traffic influence. The current ICE boundary duplicates the 2002 SCEA boundary and encompasses 531 square miles.

The temporal boundary, 1970 to 2030, estimates the time frame during which the I-270/US 15 Corridor could have influenced growth and change within the region in the past and that a build alternative could continue to influence change in the foreseeable future. The past temporal boundary was selected based upon the history of I-270 and US 15 as well as the past population and employment growth within Montgomery and Frederick Counties, and the future temporal boundary is identified as the planned design year of the project, 2030.

The resources analyzed are those upon which the project has direct effects: communities, parklands,

Figure IV-16: ICE Boundary



historic resources, surface water, wild and scenic rivers, floodplains, waters of the US (including wetlands), terrestrial and aquatic habitats and species, and farmland.

The analysis methods used include trends analysis, overlay mapping and interviews. The analysis also reviewed the report of the 2002 Land Use Expert Panel (the Panel) that was engaged to review and provide their insight on potential future land use changes.

### ICE Analysis

#### Past, Present and Future Land Use Conditions

Indirect and cumulative effects most often occur as a result of changes in land use. For the 2002 SCEA, SHA established a panel of land use experts, knowledgeable

local and national experts, to identify potential future land use in the region. The Land Use Expert Panel was provided with a comprehensive set of background materials that included projections of future land use from which to estimate differences that could result from alternative highway and transit improvements proposed along the I-270/US 15 Corridor. The Panel was asked to allocate future employment and population growth (for the year 2025) to 19 identified forecast areas for transportation alternatives that were developed as part of the Corridor Study. These forecasts were then compared to local land use plans and master plan forecasts. The differences were deemed to indicate where the I-270 alternatives could result in future land uses not anticipated by the local land use forecasts.

Overall, the Panel did not find substantial differences in future development between the local land use plans and their projections, but did identify some locations where there might be increased pressure for development greater than were identified in the various master plans.

- The Panel identified the potential for residential and business development in some of the forecast zones that straddle the corridor that is in excess of what the master plans describe; the Panel concluded that these areas may develop differently than as planned for in the county master plans. These include areas surrounding the corridor in Frederick County (Urbana, Frederick City, and to the northwest of Frederick City) and in Montgomery County in the Corridor Cities areas (Gaithersburg, Germantown and Clarksburg), east in the Damascus/Brookville area and southwest in the area surrounding MD 118.
- The Panel attributed some development differences between the LRT and BRT alternatives in the Frederick City, Germantown, and Gaithersburg areas.
- Given the counties’ commitments to preservation of parklands, development accounted for in the county Master Plans can be expected to occur in a manner that preserves these resources. Based on the land use forecasts for these zones by the M-NCPPC, a substantial amount of the existing open space, parkland, conservation and agricultural acreage will



be developed by 2025. While it is assumed that many of the planned changes will affect agricultural lands, a strong stewardship of parklands will be required to protect these resources.

It is important to note that the Panel stated that most of the additional development would occur regardless of the alternative, including the No-Build. As a result of the Panel's findings, most of the future land use, as derived in the then current master plans, was used in the analysis of indirect and cumulative effects on resources.

### Population and Employment Growth Trends

Population in Montgomery County is projected to continue to increase, but at a fairly steadily declining rate of growth. The greatest population density within the ICE boundary is predicted to be within the Corridor Cities of Gaithersburg, Germantown and Clarksburg and towards the northeast in the Damascus area. Frederick County's population is also projected to increase at a steadily declining rate of growth. The greatest growth in Frederick County is expected to be within and around the City of Frederick, with additional growth in Urbana, Mount Airy, New Market and Walkersville.

Employment in both counties is projected to continue to increase at a fairly steady but declining rate of growth. Employment growth is planned mainly along the I-270/US15 corridor in Montgomery County and Frederick County, with additional growth in Montgomery County near Poolesville and in Frederick County on the south and east side of Frederick City extending to Walkersville.

Growth in population and employment within the two counties would result in a projected increase in residential land use within the ICE boundary of approximately 47 percent and a projected increase in employment land uses (commercial/industrial/institutional) of approximately 34 percent between 2002 and 2030.

### Transportation Improvements and Development Projects

A review of the current transportation planning documents (MWCOG 2007 CLRP; MDOT CIP 2008-2013, and the Montgomery County Ten-Year

Transportation Plan September 2007) provided a list of future transportation projects within the ICE boundary, including the completion of I-70 improvements, interchange improvements along I-270 and US 15, improvements to major commuter routes within the ICE boundary, and the approval and beginning construction of the Intercounty Connector. None of the projects will be induced by or are dependent upon the I-270 project.

Residential and non-residential development was identified within the ICE boundary (projects that plan 50 or more residential units and at least 100,000 square feet of non-residential space) that includes:

- Almost 28 million square feet of commercial development planned for Montgomery County Growth Policy Areas wholly or partially within the ICE boundary.
- More than 5,600 acres planned for residential and mixed-use development in Montgomery County, with over 21,000 single or multiple family dwellings to be constructed.
- Over 7,200 dwelling units on over 844 acres in Frederick County along with more than 4.4 million square feet of non-residential space that includes a Prime Outlet Mall.

None of the residential and non-residential projects within the ICE boundary are dependent upon the I-270/US 15 project, although some approvals are predicated upon the presence of other interchange improvements or access permits from the SHA.

### Results of the Analysis

The current analysis evaluated the potential indirect and cumulative effects to communities, parklands, historic resources, surface water, wild and scenic rivers, floodplains, waters of the US (including wetlands), terrestrial and aquatic habitats and species, and farmland. The effects are expected to be minimal because the work is occurring on an existing, as opposed to a new roadway alignment, and the CCT is proposed to be constructed on a reserved master plan alignment. The conclusions reached are summarized in the following paragraphs.

### Indirect Impacts

Indirect impacts are not anticipated to affect communities, as the direct effects are expected to take place on the edges of those existing communities adjacent to the highway. Indirect effects to community cohesion and access are therefore not expected as a result of the build alternatives. Positive indirect effects will occur as a result of the benefits of shorter travel time and increased access to mass transit use.

Indirect impacts to parklands are not anticipated, because parklands are protected by the counties through development guidelines and by federal regulations including FHWA Section 4(f) regulations.

Section 106 considers audible and visual impacts as elements to be considered in determining effects to historic properties. The indirect effects of noise and visual impacts would, therefore, be subject to potential minimization and mitigation during consultation with the SHPO representing historic resources affected by the project. No further indirect effects to historic resources are reasonably foreseeable as a result of the project.

Indirect effects to surface waters and surface water quality would likely occur as a result of contamination by runoff from new impervious surfaces associated with new paved highway and transitway alignment and associated station and parking facilities. Indirect effects are not anticipated due to the inclusion of mitigation for direct impacts to streams and protection of surface water quality through the use of erosion and sediment controls, SWM facilities and BMPs to prevent contamination from roadway and transitway runoff.

The Monocacy River is the only wild and scenic river impacted by the project. Currently, the Monocacy River is directly impacted by I-270 where I-270 crosses over the Monocacy River within the Monocacy National Battlefield, and the river's tributaries are crossed by the I 270/US 15 corridor in numerous locations. The proposed improvements are not anticipated to cause indirect effects to the attributes that qualify it as a wild and scenic river. Future development adjacent to the Monocacy River's banks may negatively impact the river, as parkland buffers protect only a few areas. Some of the portions that are not protected by parkland serve as the border to the areas of Urbana, Frederick City, and northwest of Frederick City where

the Panel estimated faster growth than Frederick County's master plans projected. The result of development in these areas may negatively impact the river aesthetically, physically, and biologically.

Seneca Creek is the only river in the project area that is designated as highly significant by the 1984 Maryland Water Resources Administration's rivers study. Except for the portion of Seneca Creek that is directly impacted by the I-270 improvements, no other portion of this stream is anticipated to be impacted, as the whole of Seneca Creek is already protected within surrounding parkland area, except for an approximate 3-mile segment north of MD 124 in the Brookville/Damascus area. The Panel identified this area as parkland, however, giving it the protection status offered by parklands.

Indirect effects to floodplains would likely occur as a result of the increased impervious surfaces or due to clearing, fill placement, retaining walls and piers included in the design and construction of the alternatives. Indirect impacts to floodplains are similar to those that occur to surface waters, based on the potential for contamination by runoff from new impervious surfaces. There are state, federal and local regulations discouraging development in 100-year floodplains, and any floodplain encroachment would require authorization by MDE under a Waterways Construction Permit.

Substantial indirect impacts to Waters of the US and aquatic habitats and species, including the two newly-listed state threatened comely shiner and pearl dace, are not expected to occur, as direct impacts will be offset by the proposed project mitigation package. Most instream activities that would occur during construction of a build alternative would occur in areas already disturbed by development, and the use of BMPs and rigorous enforcement of established riparian buffer zones will minimize overall impacts.

The highway element of the project is not anticipated to have indirect effects caused by fragmentation of existing forests within the ICE boundary, because the alternatives are located along existing alignments of I-270 and US 15. The project would slightly reduce the size of forested tracts associated with the stream valley parks, but would not affect their suitability as forest

interior dwelling species (FIDS) habitat. The stream valley park associated with Great Seneca Creek would be indirectly affected by the transitway as it crosses adjacent to the highway, increasing the removal of forest edge. This area is ideal FIDS habitat and likely supports many species of mammals, reptiles and amphibians. Location of an O&M facility could also cause indirect impacts associated with forest fragmentation. Other indirect effects could result from physical and chemical changes in the forest edge adjacent to the roadway, but the likelihood of indirect effects from chemical pollution from roadway runoff will be decreased through the use of erosion and sediment controls and SWM facilities. The project will have no effect on the current trends within the ICE boundary in decreasing forest area or forest fragmentation. Direct impacts to forest resources in the project area will be offset by mitigation completed in accordance with the Forest Conservation Act and Maryland's Reforestation Law. The project mitigation will help to stabilize forest trends in the region.

The project is not anticipated to indirectly affect farmlands to the extent that it would cause the cessation of farming on any of the active farm parcels adjacent to the project, as impacts are mostly strip takings adjacent to the existing highway. The transitway is proposed on a reserved master plan alignment; therefore, indirect effects to farmland greater than those accounted for in the master plans are not anticipated. Farms within the ICE boundary will continue to be converted to residential and non-residential development. Greater development above what the county master plans illustrate, as identified by the Panel, would place increased pressure on the development of remaining farmlands.

#### Cumulative Effects

Direct impacts on the environment from the alternatives are added to the impacts of past, present and future actions to result in cumulative impacts to communities, parklands, historic resources, surface water, wild and scenic rivers, floodplains, Waters of the US, terrestrial habitat, aquatic habitat/species and farmlands. These resources have historically been impacted by development and would be further impacted by the project alternatives. All areas surrounding the Monocacy River and its tributaries are anticipated to

experience a substantial increase in both population and employment over the next 25 years. Impacts to these resources from other future actions may result in cumulative effects.

The project would add an increment to the impacts on existing communities, by requiring relocations of residents and businesses in the project area. This incremental impact may be offset as displaced residents and businesses would likely find new locations within the ICE boundary because of the continued growth and development expected. Noise impacts to communities would be mitigated by the construction of noise barriers. Any of the build alternatives would increase the visual presence of both highway and transit infrastructure. The transitway would have a moderate visual effect since it would travel mostly at ground level. Visual effects may be somewhat offset by designing transit stations to be visually compatible with surrounding neighborhoods. All of the project-related impacts or effects, when added to other transportation projects and improvements by others within the ICE boundary, would add to cumulative effects.

The contribution of the project to cumulative impacts on parklands is anticipated to be minimal as developments on parklands are rarely permitted.

Development pressures associated with population and employment growth may affect existing historic resources or properties that may be determined historically significant in the future. Both Montgomery and Frederick counties have historic preservation commissions that work to ensure that planned future development protects these resources to the greatest extent possible. The project may add incrementally to impacts on the significant resources of the Catoctin Mountain Scenic Byway, Heart of the Civil War Heritage Area, and Journey Through Hallowed Ground. Management plans for these scenic byway and heritage areas may provide opportunities for mitigation that will support the plans' goals.

The conversion of open space and forested areas to impervious areas or manicured landscapes would be expected to increase surface runoff and peak storm flows as well as introduce sediment and other pollutants into surface waters, including the Monocacy River, a Wild and Scenic River. These effects would be somewhat mitigated by required compliance with water quality protection regulations administered by MDE.

The project may make an incremental contribution to cumulative 100-year floodplain effects. The effect will be minimized to some extent within the area through mitigation sites that would enhance local floodplain function.

In the past, many Waters of the US, including wetlands, have been altered, compromised, or lost as a result of urban and suburban development in the region, and an initial lack of enforcement of waterways protection regulations. The initial construction of I-270 played a role in this trend. Waters of the US are expected to be minimally impacted overall. The proposed mitigation package for wetlands and waterways impacts, however, will help stabilize overall impact trends.

Cumulative impacts to forest resources, forest habitats/species and State Champion Trees may occur; however, the project's role should be minimal, given the amount of existing, planned, and forecasted urban development anticipated in the next 20 plus years. Local master plans for the region anticipate an increase in housing stock and housing density regardless of the completion of the I-270 project. Additionally, nearly all of the forests within the ICE boundary have been harvested in the past, and most of the currently existing forest areas are under local, state, or federal protection.

Minor cumulative impacts to aquatic species, including the state-listed comely shiner and pearl dace, or aquatic habitats are anticipated; however, the use of BMPs and erosion and sediment controls, in addition to time-of-year restrictions on in-stream construction activities, will minimize these impacts.

Completion of a build alternative would directly impact some farm properties through right-of-way acquisition. Still, the pressure for further development to support the growing population will impact farms indirectly. As the cycle of development perpetuates, greater demands are

placed on agricultural land to be developed for non-farm uses. Cumulative effects in the southern portion of the ICE boundary will be minimal, because there is little farmland left undeveloped. Residential and commercial growth within the ICE boundary will account for most of the cumulative effects and continue the decline in the number of farms and acreage used for farming.

#### Conclusions

The conclusions reached by the ICE analysis show that there are, overall, minor indirect effects to resources as a result of the implementation of Alternatives 6A/B or 7A/B. There are no transportation or development projects that are dependent upon the I-270/US 15 improvements. The analysis also showed that the project would add an incremental amount of impacts to the cumulative impacts of all other projects planned for the area within the ICE boundary.

The current ICE analysis agrees with the projections of the 2002 Land Use Expert Panel in stating that some locations in the region may experience future development beyond that planned for Montgomery and Frederick Counties, and that the additional development would occur whether or not the project was constructed. Both the Panel's conclusions and the current ICE analysis are based on projected locations of population and employment growth as identified in area master plans.

There are incremental changes in current and proposed land uses since the 2002 DEIS, based on construction in planned development areas, current area zoning, and area master plans. The boundaries of PFAs have been modified slightly to accommodate new development. In the intervening years, planned development projects have been constructed and new projects have received approval for construction within the designated development areas.

There are no indications that the conclusions reached in the 2002 SCEA have changed, because no major changes in future land use have occurred since its publication. The region is continuing to experience substantial growth, and resources in some locations may be under unanticipated development pressure from that growth.



M. Energy

This section of Chapter IV addresses the use of energy that is anticipated by the proposed project alternatives. Energy is an important environmental resource, and its use contributes to the degradation of other environmental resources such as air quality and land. This section begins with a discussion of how energy is measured for the purposes of this analysis, continues with a discussion of the potential impacts and measures to minimize harm related to the proposed project alternatives.

Energy is commonly measured in terms of British thermal units, or BTUs. A BTU is the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. For transportation projects, energy usage is predominantly influenced by the amount of fuel used.

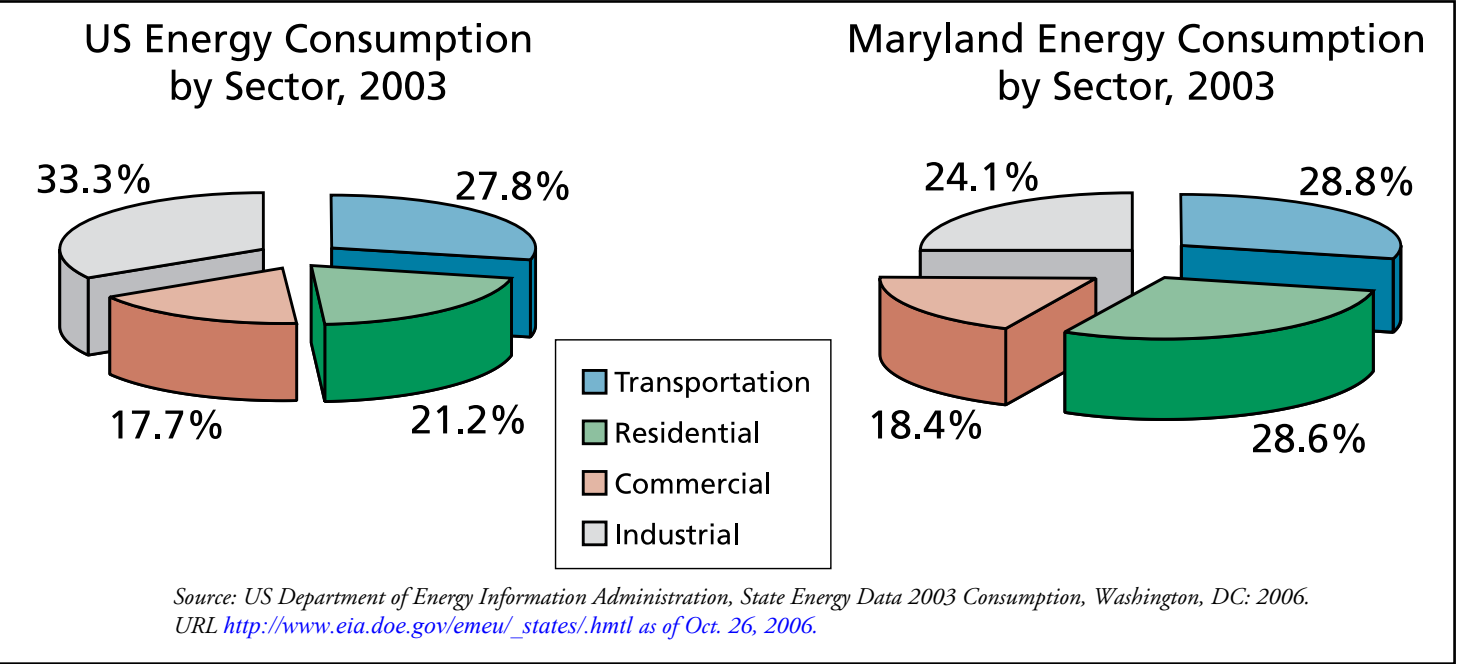
As shown in **Figure IV-17**, transportation is the second largest source of energy consumption in the United States. In Maryland, the transportation sector is the largest source of energy consumption. On a per capita basis, Maryland’s transportation energy consumption is 75.3 million BTUs, which is below the United States per capita average of 93.1 million BTUs (USDOT, 1993). Petroleum (e.g., gasoline, diesel fuel, jet fuel) is the predominant source of energy for transportation in Maryland, as shown in **Figure IV-18**.

Transportation energy is generally discussed in terms of direct and indirect energy. Direct energy is the energy used to operate vehicles. The amount of energy used is a function of traffic characteristics such as volume, speed, distance traveled, vehicle mix, and thermal value of the fuel being used. Indirect energy is the energy needed to construct the project. This is a non-recoverable, one-time energy expenditure.

Impacts and Measures to Minimize Harm

This section provides an assessment of the project’s impact on transportation-related energy consumption in the study area. Two data sources were applied to estimate the project’s energy consumption. For roadway energy, the analysis techniques and data discussed in the reports *Energy and Transportation Systems* (California Department of Transportation (Caltrans) and the U.S. Federal Highway Administration (FHWA), 1983) and *Urban Transportation and Energy: The Potential Savings of Different Modes* (Congress of the United States, 1977)

Figure IV-17: Energy Consumption by Sector



As shown in **Table IV-42**, overall energy levels are predicted to decrease with the project. Alternative 7B is predicted to have the largest overall energy reduction of approximately 0.7 percent, followed by Alternative 7A with a reduction of approximately 0.6 percent. Alternatives 6A and 6B are both predicted to reduce estimated transportation energy requirements by approximately 0.5 percent. All changes in energy consumption are less than 1.00 percent, making them essentially immeasurable.

Indirect Energy

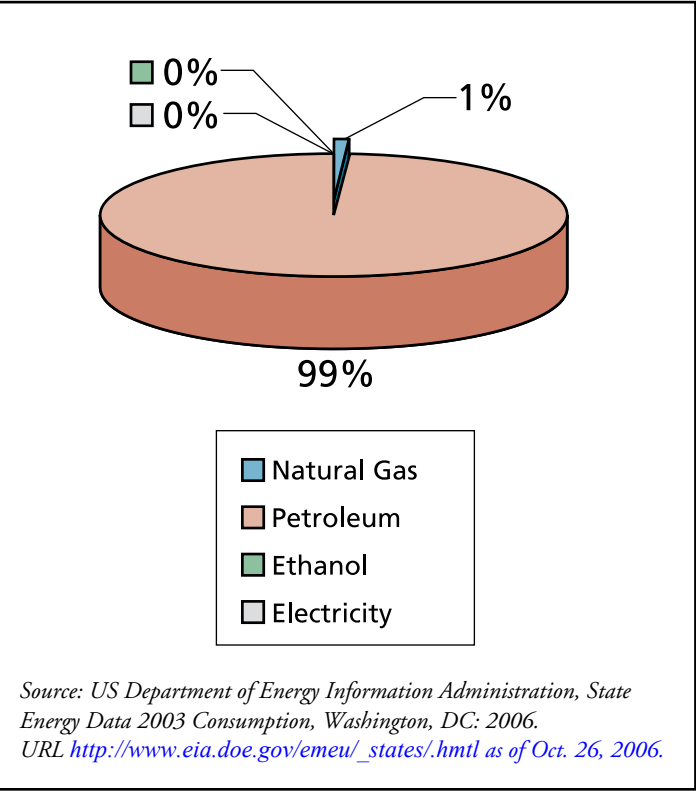
Accurate indirect energy costs are extremely difficult to estimate given the uncertainty of field variables at this point in the analysis. The indirect energy values calculated should be considered as an indicator between alternatives, rather than absolute values. Construction energy factors estimate the amount of energy necessary to extract raw materials, manufacture and fabricate construction materials, transport materials to the work site and complete construction activities.

The analysis is based on the number of lane miles (or track miles) to be constructed for each alternative. Estimates of construction energy reflect at-grade, elevated and below grade construction. As shown in **Table IV-43**, indirect energy expenditures are predicted to be highest for the BRT Alternatives. This is due to the higher energy requirements estimated for constructing one elevated roadway mile as compared to one elevated track mile.

Measures to Minimize Harm

Conservation of energy could be achieved in facility planning, construction, operation and maintenance. Conservation could also be applied to recycling pavements, hardware items (guardrails, signals, tires, right-of-way, etc.), using indigenous plants for landscaping, and applying Best Management Practices in roadway maintenance. Other measures that could be applied include using high pressure sodium vapor lamps for light, solar powered lighting, promoting carpools, vanpools, and bicycle projects.

Figure IV-18: Transportation Energy Consumption by Energy Source



were applied. This methodology takes into account vehicle mix and speed fluctuations between the alternatives. For LRT and BRT energy estimates, energy usage factors from the *Transportation Energy Data Book, Edition 26* (U.S. Department of Energy, 2007) were applied.

Direct Energy

As shown in **Tables IV-41** and **IV-42**, the project is predicted to have less than a one percent effect on overall energy consumption. **Table IV-41** highlights the project’s impact on transportation energy levels within the study corridor (I-270 and a 1.5 mile radius around it). **Table IV-42** highlights the project’s impact on transportation energy levels within the entire region. As these tables show, transportation energy usage is predicted to slightly increase within the immediate study area while regionally, transportation energy usage is predicted to slightly decrease due to the project. The increase within the study corridor is due to vehicles traveling to the station locations. The study corridor projections do not include the vehicle miles traveled VMT savings as a result of the project because the trips saved are outside of the boundaries of the study corridor. These savings are shown in the VMT projections for the region, and shown in **Table IV-42**. The regional values are used to discuss project impacts since they encompass the full impact of the project.



Table IV-41: Predicted 2030 Transportation Energy Usage within Study Corridor

MODE	ALTERNATIVE 1 (NO-BUILD)	ALTERNATIVE 6A	ALTERNATIVE 6B	ALTERNATIVE 7A	ALTERNATIVE 7B
Roadways					
Daily VMT	40,557,948	40,950,909	40,950,909	41,020,351	41,020,351
Daily Average Speed	21.9	22.2	22	22.4	22.4
Total Roadway BTUs (millions)	321,867	323,333	323,333	323,411	323,411
% Change from No-Build	–	0.46%	0.46%	0.48%	0.48%
LRT					
Daily VMT	0	5355	0	5355	0
Total Electric Propulsion BTUs (millions)	0	459	0	459	0
BRT					
Daily VMT	0	478	10,375	478	10,375
Total BRT BTUs (millions)	0	20	443	20	443
Annual Direct Energy Consumed BTUs (millions)	321,867	323,813	323,776	323,890	323,854
% Change from No-Build	–	0.60%	0.59%	0.63%	0.62%

Table IV-42: Predicted 2030 Regional Transportation Energy Usage

MODE	ALTERNATIVE 1 (NO-BUILD)	ALTERNATIVE 6A	ALTERNATIVE 6B	ALTERNATIVE 7A	ALTERNATIVE 7B
Roadways					
Daily VMT	231,985,079	231,472,024	231,472,024	231,456,046	231,456,046
Daily Average Speed	19.3	19.5	19.5	19.5	19.5
Total Roadway BTUs (millions)	1,933,262	1,922,391	1,922,391	1,920,398	1,919,804
% Change from No-Build	–	-0.56%	-0.56%	-0.67%	-0.70%
LRT					
Daily VMT	0	5355	0	5355	0
Total Electric Propulsion BTUs (millions)	0	459	0	459	0
BRT and Feeder Bus					
Daily VMT	0	478	10,375	478	10,375
Total BRT BTUs (millions)	0	20	443	20	443
Annual Direct Energy Consumed BTUs (millions)	1,933,262	1,922,870	1,922,834	1,920,878	1,920,247
% Change from No-Build	–	-0.54%	-0.54%	-0.64%	-0.67%

Table IV-43: Indirect Energy Consumption

TYPE OF CONSTRUCTION	ALTERNATIVE 6A		ALTERNATIVE 6B		ALTERNATIVE 7A		ALTERNATIVE 7B	
Track or Roadway miles	Track miles	Roadway miles	Track miles	Roadway miles	Track miles	Roadway miles	Track miles	Roadway miles
at grade	12.4	0	0	12.4	12.4	0	0	12.4
elevated	0.9	0	0	0.9	0.9	0	0	0.9
below grade	0.1	0	0	0.1	0.1	0	0	0.1
Total BTUs Consumed	207,891		297,893		207,891		297,893	

Notes:  
Urban Transportation and Energy, US Senate Committee on Environment and Public Works, December 1977.  
Surface track construction = 12,290 million BTUs/track mile.  
Elevated track construction = 55,460 million BTUs/track mile.  
Subway track construction = 99,510 million BTUs/track mile.  
Surface highway construction = 13,885 million BTUs/lane mile.  
Elevated highway construction = 130,379 million BTUs/lane mile.



## Transit Costs and Funding

This chapter presents cost and financial analysis information needed to fully evaluate the transit alternatives as provided in the Federal Transit Administration (FTA) requirements for conducting an Alternatives Analysis (AA). Costs and funding information for the I-270/US 15 highway alternatives is included in **Chapter VI**. Transit costs include the one-time capital cost for design and construction, as well as the annual change in operation and maintenance (O&M) costs for the Corridor Cities Transitway (CCT), light rail transit (LRT), and bus rapid transit (BRT) alternatives.

This chapter also discusses the availability and source of funds that will pay for the proposed transit project, including a discussion of the Maryland Transit Administration (MTA) funding mechanisms and future financial outlook, and the strategy for funding the capital cost and O&M costs of the alternatives.

It is important to keep in mind that although the focus of this section is on distinguishing between transit alternatives, the I-270/US 15 Multi-Modal Corridor Study would likely include highway improvements as well as transit improvements as a means for addressing the Purpose and Need for this study.

### Capital Costs

Capital cost estimates have been developed in accordance with FTA guidelines. The guidelines call for cost estimates to be prepared and reported using the latest revision of FTA's Standard Cost Categories. They form the basis for the format and structure that is used for the capital cost detail and summary sheets developed for this project. The *Capital Cost Technical Memorandum* (March 2008) provides more detailed discussion on the methodology used to estimate capital costs.

The current FTA Standard Cost Categories consist of the following:

- Guideway and Track Elements
- Stations, Stops, Terminals, Intermodal
- Support Facilities: Yards, Shops, Administration Buildings
- Sitework and Special Conditions
- Systems (power, control, communication)
- Right-of-Way, Land, Existing Improvements
- Vehicles
- Professional Services
- Contingency

Each of the alternatives under consideration for the CCT has a set of conceptual engineering drawings, typical sections, station locations, and/or written descriptions that provide definition for each of the major cost components. These documents form the basis for the infrastructure elements that were used to prepare the capital cost estimates. These facility elements can be classified into one of two broad groups, either typical or non-typical facilities.

Typical facility costs are developed for elements that can be defined by typical sections and applied over a given length of alignment, such as roadbed, track, and catenary power. The typical facility composite unit cost is developed by combining the costs for all of the individual construction elements for a typical section or facility and creating a representative composite unit cost.

Non-typical facilities include elements necessary for overall system operation but which costs cannot be allocated to a specific geographic segment of the system (e.g., vehicles, O&M facility). After details are prepared for both typical and non-typical facilities and the cost data are developed, they are put into a format summarizing overall alternative cost and the cost of various alignment segments.

### Contingency

Contingency is the estimated percentage by which a calculated value may differ from its true or final value. The contingency allowance is used to account for items of work (and their corresponding costs) that may not be readily apparent or cannot be quantified at the current level of design. These could include unknown project scope items or a potential project change resulting from public or political issues, or environmental or technical requirements. For the purposes of this study, contingency is divided into two major categories: allocated and unallocated.

Allocated contingency is based on the level of design information available for individual items of work, as well as the relative difficulty in establishing unit prices for these items. The allocated contingency allowance, in the range of five percent to 30 percent, is allocated according to FTA construction or procurement cost categories. The exact percentage selected for each cost category is based on professional judgment and experience related to the cost variability typically seen for items of work within a particular cost category.

Unallocated contingency is similar to allocated contingency in that it is primarily applied as an allowance for unknowns and uncertainties due to the level of project development completed. The major difference is that allocated contingencies are intended to address uncertainties in the estimated construction, right-of-way, and vehicle costs that typically occur as the amount of engineering and design information advances, while unallocated contingencies are typically broader in nature and often address changes in the project scope and schedule. Unallocated contingency is calculated as two to five percent, depending on the cost category.

### Professional Services

This cost category includes allowances for preliminary engineering, final design, project and construction management, agency program management, project insurance, surveys and testing, and start-up costs. These allowances are computed by applying a percentage to the total construction cost estimated for each cost

category (excluding right-of-way and vehicle costs). Right-of-way and vehicle costs typically are calculated to include the management and administration costs associated with these activities and are therefore excluded from the calculation of professional services.

### Capital Cost Assumptions

Key assumptions affecting the capital cost estimates included in the financial strategy are discussed in the following paragraphs.

The use of roadway right-of-way controlled by the state is assumed to be granted to the project at no cost, except for construction of new facilities and replacement and/or repair of existing facilities. The costs for these property dedications will be shown when available, but will not be included in the final cost for the project.

A hiker-biker trail is proposed in association with the CCT. While the design of the CCT would accommodate this proposed trail, it is assumed that a separate funding program would be undertaken by the local jurisdictions for construction and maintenance of the trail.

The capital cost estimates assume traditional design-bid-build procurement, construction, and equipping for implementing the CCT project, although other means of project implementation could be used, such as design-build.

For reasons of construction, corridor readiness, and/or funding availability, the project could be implemented in stages or phases. At this point, no definitive decision has been made regarding any phasing or staging. Possible initial phases, referred to as minimal operable segments (MOS), could be Shady Grove to Metropolitan Grove or Shady Grove to Germantown. Any initial MOS phase would require a maintenance and storage facility.



Table V-1: Alternatives Capital Cost Estimate (\$Million)

DESCRIPTION	ALTERNATIVE 6.2 TRANSIT TSM	ALTERNATIVE 6A/7A (LRT)	ALTERNATIVE 6B/7B (BRT)
Length (miles)	17.62	13.4	13.4
Number of Stations	13	13	13
Number of Revenue Vehicles	16	29	45
Element Costs (\$Million)			
Guideway and Track Elements	\$0.00	\$202.12	\$140.90
Stations, Stops Terminals, Intermodal	\$17.03	\$20.29	\$17.03
Support Facilities: Yards, Shops, Administrative Buildings	\$0.00	\$55.21	\$14.49
Sitework and Special Conditions	\$27.25	\$88.02	\$87.99
Systems	\$4.94	\$90.18	\$21.52
Construction Cost Subtotal	\$49.22	\$455.82	\$281.93
Right-of-way, Land, Existing Improvements	\$7.38	\$35.00	\$35.00
Vehicles	\$11.36	\$112.20	\$25.66
Professional Services	\$15.75	\$145.86	\$90.22
Unallocated Contingency	\$3.15	\$28.65	\$17.11
Total Project Cost	\$86.86	\$777.53	\$449.92

Note: All costs in \$M (2007 \$)

Capital Cost Estimates

The cost estimates for the LRT and BRT alternatives are presented in **Table V-1** in 2007 dollars. In general, LRT alternatives have higher capital costs than BRT alternatives due to LRT’s need for continuous track, power, and signal systems.

Operations and Maintenance Costs

The O&M cost models developed for this study conform to FTA’s technical guidelines for transit alternatives analysis. Estimating O&M costs for an alternatives analysis involves two major steps:

- 1. Development of operating plans and estimation of operating statistics for each transit mode included in each alternative, and

- 2. Development of O&M cost models and their application to the operating statistics obtained in Step 1 to estimate the O&M costs for the new service.

The operating statistics (e.g., vehicle hours, vehicle miles) are derived from the final operating plan for each service alternative after the supply of transit service (number of vehicles operating and passenger carrying capacity provided in a given period) is balanced with the estimated demand (number of passengers in a given period) using travel demand models, a process referred to as *equilibration*. The final operating plan describes the level of service to be provided as part of each alternative, including peak and off-peak service for weekdays and weekends.

The estimating approach used for this study conforms to the FTA’s most recently issued technical guidelines for transit alternatives analysis (*Procedures and Technical Methods for Transit Project Planning: Review Draft*, September 1986 and updates), to the extent possible at this stage of the planning process. The transit cost models use the resource buildup approach methodology recommended by FTA, and the cost models are fully allocated models. This means that they test the effects of system changes (such as expansions of the rail or bus system) on costs of all areas of the agency’s operation and are capable of testing different levels of costs for many individual elements of the operation, including the wages and salaries of operators and maintenance personnel, costs for fringe benefits, and for fuel. The models, which are derived principally using the National Transit Database, follow FTA’s recommended approach of separating and classifying individual expense categories.

Public transportation in the area served by the proposed CCT project is provided by a variety of transit agencies, including Montgomery County Ride-On, Washington Metropolitan Area Transportation Administration (WMATA) and the MTA.

Separate O&M models were developed for Ride-On local bus, MTA BRT and MTA LRT operations. The O&M cost models were validated by comparing them to actual expenditures using recent Ride-On, MTA bus and MTA light rail operating statistics. The *Corridor Cities Operating and Maintenance*

*Cost Estimate Report* (March 2008) documents the development of the O&M cost models and estimates, including documentation of the data sources and model validation.

The LRT and BRT alternatives involve three elements affecting O&M costs: the costs of operating and maintaining the LRT or BRT service and vehicles; the cost of operating and maintaining the LRT or BRT facilities, including guideways, stations, and other physical components; and the changes in O&M costs from the adjustment of the local bus services along and across the corridor to reflect shifting ridership demand.

O&M Cost Assumptions

The key assumptions affecting the O&M cost estimates included in the financial strategy are discussed below.

The MTA is assumed to be responsible for operation and maintenance of the CCT LRT or BRT services and associated costs.

MTA, WMATA, Montgomery County and other transit operators in the corridor and surrounding region will continue to be responsible for operation and maintenance of their bus and rail transit services and facilities, recognizing that some adjustments to service levels, scheduling and routing (in the case of bus services) may result from implementation of the project.

The cost of operating and maintaining the hiker biker trails built in conjunction with or adjacent to the CCT project would be the responsibility of local jurisdictions.

The O&M cost estimates assume the current practice of operating and maintaining transit services would continue, although other means of operating and maintaining the services and facilities could be used, such as contracting the services to private companies.

As discussed previously in this chapter under Capital Cost Assumptions, the project could be implemented in stages or phases and have a modified operating plan.

O&M Cost Estimates

O&M costs cover the labor and material costs to operate the transit service, such as bus and light rail operators and supervisors. They also cover the costs to maintain the vehicles and guideway, such as vehicle maintainers, track and signal maintainers, station and



vehicle cleaners, and transit police. O&M costs fluctuate by the amount of transit service provided, i.e. frequency of service and the number of vehicles necessary to operate that service. O&M cost models are used to test the effects of system changes, and help differentiate the proposed alternatives.

**Table V-2** summarizes the net change in operating characteristics for each of the alternatives compared to the No-Build. Each alternative involves a core transit service operating between Shady Grove and Communications Satellite, Inc. (COMSAT), and adjustments to the background bus service. As described in the discussion of transit operating system features in **Chapter III** and in the *I-270 Multi-Modal Corridor Study Corridor Cities Transitway Detailed Definition of Alternatives* (October 2007) report, the BRT trunkline service supplements existing bus service, with several existing routes operating on the proposed guideway. The guideway in the LRT alternatives replaces sections of several routes, with those buses terminating at an LRT station, and consequently show a larger reduction in background bus operations.

Total estimated O&M costs for the alternatives are shown in **Table V-3**. The costs are derived by multiplying the unit costs for peak vehicles, vehicle miles and hours, and length of guideway (for LRT and BRT) to the operating statistics shown in **Table V-2**.

Financial Strategy

This section summarizes the current strategy for funding and financing a project that may emerge from this AA. It provides background information regarding transportation revenue and expenditures in Maryland, and places the project in the context of the state’s transportation budgeting and capital planning process. The CCT from Shady Grove to COMSAT is included as a project in the Metropolitan Washington Council of Governments (MWCOC) Constrained Long Range Plan (CLRP). The project is also in the State Transportation Improvement Program/Consolidated Transportation Program (STIP/CTP) for ongoing planning through 2013.

Table V-2: Annual Change in Operating Characteristics

ALTERNATIVE	ALTERNATIVE 6.2 TRANSIT TSM	ALTERNATIVE 6A/7A (LRT)	ALTERNATIVE 6B/7B (BRT)
Alternatives Transit Service			
Daily Peak Vehicles	9	24	31
Annual Vehicle Revenue Miles	585,980	1,401,488	1,598,200
Annual Vehicle Revenue Hours	38,200	81,312	94,250
Track Miles	0	26.6	--
Guideway Miles	0	--	26.6
Background (Other) Bus Services:			
Daily Peak Vehicles	29	6	29
Annual Vehicle Revenue Miles	1,514,200	143,500	1,514,200
Annual Vehicle Revenue Hours	64,750	6,500	64,750

Table V-3: Annual O&M Costs by Alternative

ALTERNATIVE	ALTERNATIVE 6.2 TRANSIT TSM*	ALTERNATIVE 6A/7A (LRT)	ALTERNATIVE 6B/7B (BRT)
LRT	--	\$26,985,700	--
BRT	\$5,842,400	--	\$17,907,850
Background Bus	\$8,950,950	\$1,143,400	\$8,950,950
Total	\$14,793,350	\$28,129,000	\$26,859,800

\*Refers to core bus service operating from Shady Grove to COMSAT and stopping at all CCT stations.

Transit Funding in Maryland

The MTA is unusual as a transit agency in that it is part of the Maryland Department of Transportation (MDOT) and the non-federal share of transit expenditures, both capital and operating, is typically funded by the State. Transit is one of several modes that is funded using the Maryland Transportation Trust Fund (TTF). The TTF was created in 1971 to provide a dedicated source of revenues to support state transportation. The fund supports all of the department’s activities including debt service, modal agency operations, and capital projects.

All state revenues for transportation are collected through the TTF, including taxes, user fees and charges, bond proceeds, federal aid, and operating receipts. Highway toll revenues are collected by the Maryland Transportation Authority and are not included in the TTF.

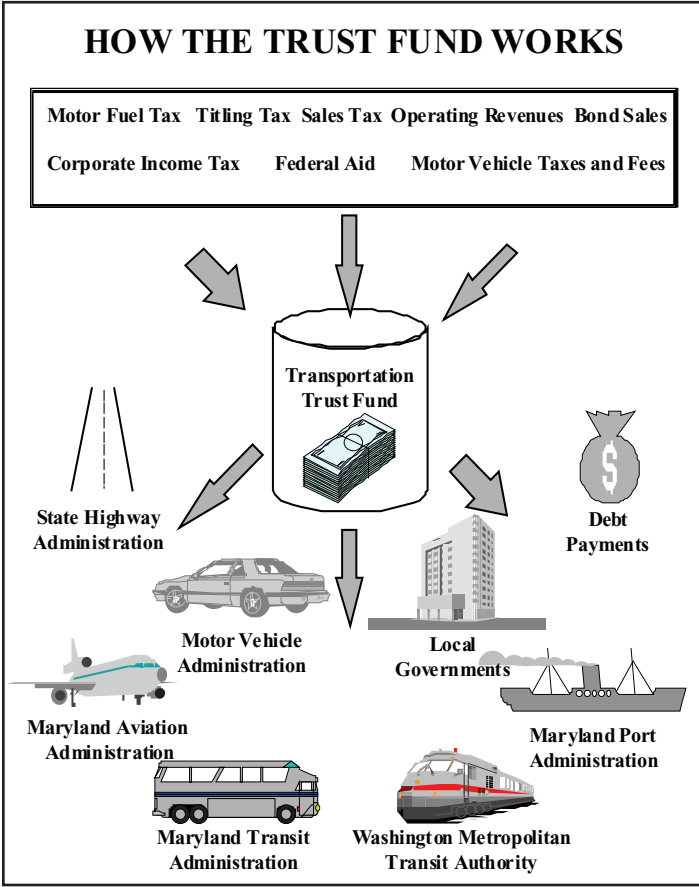
Several sources of revenues make up the TTF. They include the following:

- Motor vehicle fuel tax of 23.5 cents per gallon of gasoline, 24.25 cents per gallon of diesel fuel, and seven cents per gallon of aviation fuel
- Motor vehicle registration and other fees
- Motor vehicle title tax of six percent of the fair market value of new and used vehicle sales and those of new residents
- Corporate income tax – 21 percent of the State’s 8.25 percent corporate income sales tax
- Operating revenues from Maryland transit fare boxes
- Beginning in 2009, 6.5 percent of the six percent state sales and use tax will be dedicated to the TTF and is estimated to be \$1.6 billion over the six-year period covered by the MDOT capital program
- Maryland Port Administration terminal operations, Maryland Aviation Administration flight activities, fees, parking, and concessions

- Federal funds authorized by the US Congress. The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) legislation authorized \$720 million in annual funds to the department; \$580 million in highway programs and \$140 million in transit funds.

The TTF is predominantly comprised of motor vehicle and other user fees. These offer a stable source of revenue for MDOT, a source that typically grows at a modest rate each year. However, because the motor vehicle fuel tax is a flat fee, rather than charged as a percentage of retail prices, revenues from that source do not grow with inflation. Similar to most revenue sources at the State, local and federal levels, the TTF will fluctuate in response to economic conditions. *Figure V-1* shows how the TTF works.

Figure V-1: Transportation Trust Fund Overview



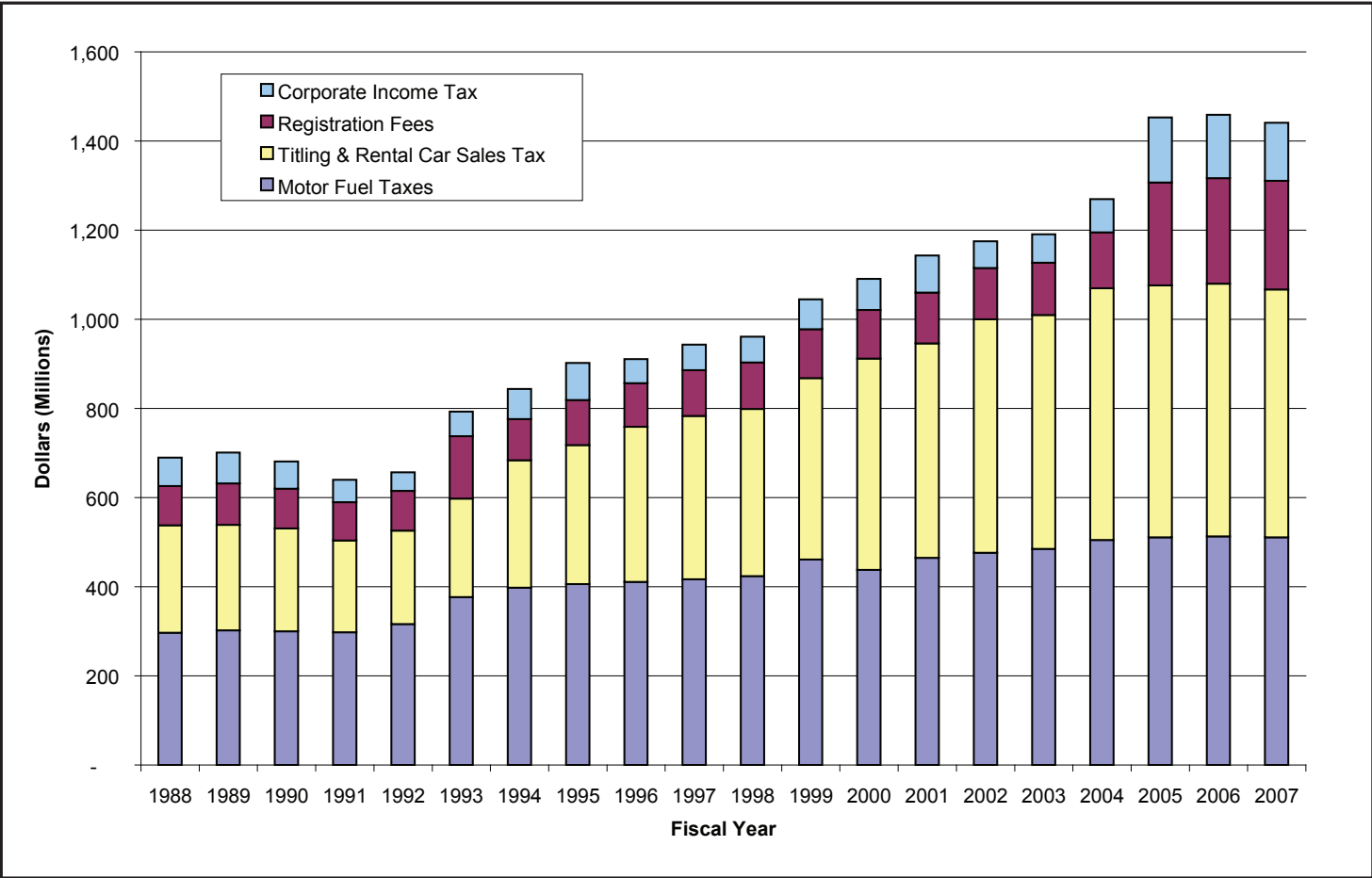
Allocation of TTF funds is determined by the Maryland Secretary of Transportation and approved by the Governor and the General Assembly. A target fund balance of \$100 million is maintained to provide for MDOT’s working cash flow requirements.

Maryland is considering a number of major transit capital investments in addition to the CCT, including the Red Line Corridor in Baltimore and the Purple Line Transitway in Montgomery and Prince George’s Counties, as well as a major MARC expansion (the commuter rail system in Maryland serving the Baltimore-Washington area). In addition, high priority is being given to existing transit system preservation and rehabilitation. Along with transit needs, substantial funding needs exist for highways and other transportation systems supported by the TTF, which will require decisions regarding revenue increases for the TTF, other sources of revenue, and prioritization regarding the scale and timing of the projects for the transit corridors.

*Figure V-2* illustrates the annual TTF revenue from 1988 to 2007. The last time the 23.5 cent per gallon gasoline tax was raised in Maryland was 1992. Revenues in the Trust Fund, although growing at a relatively steady rate, were simply not keeping up with the State’s transportation needs. An increase in Motor Vehicle registration and titling fees in 2004 helped increase trust fund revenues starting in fiscal year 2005. However, even with these increased estimates, MDOT projected a potential \$1.5 billion transportation funding shortfall by 2008 and a \$40 billion shortfall over the next twenty years. This projected shortfall is attributed in particular to growth in the transportation system and system demand, increased needs for maintenance to the existing aging infrastructure, including bridges, roads, transit rolling stock and facilities, and increasing costs that are growing at a rate that exceeds inflation.

During a Special Session of the Maryland General Assembly held in late 2007, the General Assembly passed, and the Governor signed, a combination of revenue enhancements that increased TTF revenues by more than \$400 million a year. These funds have been programmed in the 2008 CTP that allocates funding to capital projects for fiscal years 2008-2013. A substantial portion of the revenue increase was dedicated to the

Figure V-2: 1998 – 2007 Transportation Trust Fund Revenue



State’s transit program. The CCT received \$80 million of the revenues from the increase. This money should be sufficient to take the project through completion of preliminary engineering and into final design.

Historically, transit has received approximately 35 percent of the TTF over a given six-year capital program with considerable variation between capital programs depending on the specific projects in the program. In FY 2007, transit accounted for 25.3 percent of the TTF expenditures with 18.6 percent allocated to MTA and 6.7 percent allocated to WMATA. The high percentage of the revenue increase allocated to the MTA for its transit program, including the specific \$80 million allocation to the CCT, demonstrates a strong commitment to the growth and viability of the State’s transit program.

Despite the recent influx of State revenues to the TTF and transit in Maryland, the State anticipates inadequate funds to accommodate the State’s considerable growth plan for transit, including the implementation of three major capital investment projects (the CCT, the Purple Line, and the Baltimore Red Line). Therefore, the MTA is developing a plan that combines the staggering and phasing of projects with a program to capture additional revenues from local governments and other sources. The intent is to have funds available to meet capital and operating costs of New Starts projects, as well as a range of additional system enhancements to improve system preservation and operations of the existing transit system and its general operating obligations.



This strategy is in the process of being developed by MDOT, along with a specific implementation plan. Beyond state funds, the remainder of the funding would come from federal, county, and possibly private-sector sources. It is expected that Montgomery County would provide capital funds for construction of the CCT in addition to right-of-way contributions, easements, and ancillary roadway and trail facilities.

### Montgomery County Funding

Montgomery County is a member jurisdiction of WMATA through the Washington Suburban Transit Commission (WSTC). WSTC was created in 1965 by the General Assembly of Maryland. The WSTC appoints members of the WMATA board of directors for each of the two member jurisdictions in Maryland and is tasked with developing mass transit programs in Montgomery and Prince George's Counties.

WMATA was formed through an interstate compact among Maryland, Virginia and the District of Columbia, with the consent of Congress in 1967. WMATA provides Metrobus and Metrorail service to Montgomery County, as well as the remainder of the Washington region. Mass transit has become an integral part of the transportation network of the county with present services provided via a number of Metrobus and Ride-On routes and Metrorail Red Line.

In 1980, federal legislation authorizing funding for the Metrorail system required the local governments in the Washington region to develop a “stable and reliable” source of funding for the local costs required to build and operate mass transit systems. Montgomery County satisfied that requirement because it had already, in 1965, established a Mass Transit Facilities Fund that receives revenue from a county real estate tax dedicated to transit, as well as State aid.

Proceeds from the local property tax are currently the main source of funding for transit services which goes to funding local bus service, including Ride-On bus service, and the county's local share of WMATA's capital and operating costs, bus operations, rail operations and debt service.

### Potential Private Sector Funding

The private sector is a potential source of funding, especially in areas that are undergoing, or are expected to undergo, future land development changes. The FTA has adopted policies that give special interest and preference to transit projects involving private sector participation. This includes station area joint development projects and private value capture financing techniques to assist in funding the capital and/or operating and maintenance costs of transportation improvements. Joint development is any development that is physically and/or functionally related to transit station areas. Value capture is the technique or mechanism used to “capture” a portion of the incremental value created on land and improvements associated with the transit system.

MDOT, WMATA, and Montgomery County have recent experience in both joint development and value capture mechanisms. Specific policies and value capture mechanisms utilized by MDOT include leasing of transit agency owned land for air rights development, right-of-way contributions, developer “in-kind” contributions, and lease arrangements. WMATA derives significant value capture revenues through leasing transit-owned property for air rights development and has also obtained limited revenues through developer cost sharing arrangements and connector fees. Montgomery County has many of the zoning and policy tools in place to promote station area development (i.e., transit district overlay zone process) and is experienced in determining the prorated cost share for off-site facilities that developers must proffer in transit districts.

A variety of joint development and value capture mechanisms offer the potential to contribute to the capital, operations, maintenance, and funding of the CCT:

- **Transit District Overlay Zone (TDOZ)** – This mechanism has been established in Montgomery County to promote coordinated and integrated development schemes around transit stations through the District Overlay Zoning process. A designated transit district includes specific land uses and densities for areas around transit stations including the distance from the station locations.

- **Right-of-Way Contributions** – This category includes the contribution of privately or publicly owned land that is needed for the transit improvement's right-of-way, station areas, or support facilities.
- **Developer Dedication/Proffers** – This category includes the amount developers might be willing to pay for off-site facility improvements associated with transit station area development. The amount of potential proffers is based upon the increase in residual land value that is expected to occur as zoning allows developers to build at a higher density than would otherwise occur without transit service.

While there are no committed sources or amounts of capital or operating and maintenance funding support from these private sector sources, the MTA, Montgomery County, and the Maryland-National Capital Parks and Planning Commission (M-NCPPC) will continue to look for private sector funding opportunities.

Private sector funding contributions would most likely come from development projects adjacent to CCT stations, particularly Crown Farm, Decoverly, Quince Orchard, Metropolitan Grove (existing MARC station), Germantown and COMSAT. Contributions are typically targeted toward stations, transit right-of-way, and enhancements along the alignment.

### Federal Aid

The US Department of Transportation (USDOT) is a prime source of funding major transportation infrastructure construction, especially for interstate highways and transit. The principal source for transit major capital investments is the FTA's New Starts program discussed below. A number of other federal programs have the potential to provide some funding for enhancement and associated components of a CCT Locally Preferred Alternative (LPA) and will be explored further once the LPA is selected.

### New Starts

The FTA's discretionary New Starts program is the federal government's primary financial resource for supporting locally planned, implemented, and operated major transit capital investments. The New Starts

program funds new and extensions to existing fixed guideway systems, including commuter rail, light rail, heavy rail, BRT, trolleys, and ferries. For the five-year period FY 2005-FY 2009, the New Starts program is authorized at \$7.4 billion (\$1.5 billion per year average). The New Starts program is funded at about 16 percent of the total federal transit funding for FY 2005-FY 2009 (\$45.3 billion). To qualify for federal funding, transit New Starts projects must be authorized by the US Congress in the Surface Transportation Authorization Act, which occurs every five or six years. The current authorization act (SAFETEA-LU) is in effect through FY 2009. The allocation of federal funds for specific transit New Start projects occurs in the annual Transportation Appropriations Act. Congress earmarks transit New Start discretionary funds to various projects throughout the country. The bulk of projects that obtain federal transit discretionary funding earmarks are those projects that are in FTA's Full Funding Grant Agreement (FFGA) process. In fact, FTA's FY 2007 budget request to Congress includes \$1.228 billion (92 percent of the total request) for New Starts projects in the FFGA pipeline and \$102 million for other projects (eight percent).

Due to intense competition for federal transit funding, the federal share for transit New Starts projects has steadily declined over the past 10 years. Although the law allows an 80 percent federal share for New Starts projects, the trend has been to limit federal funds to around 50 percent. Funding for transit projects in Maryland is an excellent example of this change in that the original Washington Metrorail system received 100 percent federal funding. When the Baltimore Metro was built, it received 90 percent federal funding. In the 1990s when the Baltimore Central Light Rail Line was built, it received 80 percent federal funding compared to the recently completed Metrorail Largo extension that received 60 percent federal funding. Because requests for this funding assistance far outstrip the available funds, projects from around the country compete against each other for funds. In recent fiscal years, the Congressional Appropriation Committee has been limiting the federal share to 50 percent and nearly all project requests for federal assistance are in this range.

For transit projects seeking federal funds, the agency sponsoring a locally selected transit project submits a “New Starts Criteria” package to FTA to get the project into the “funding pipeline.” This package is first developed after the AA is completed and an LPA is selected, and prior to the request to enter the Preliminary Engineering (PE) phase. The package provides information describing the proposed project and information about a number of criteria used to rate the project against other projects from around the country competing for the limited pool of Section 5309 New Starts funds. These criteria include the following:

- Mobility improvements (travel time savings, low income households served)
- Environmental benefits
- Operating efficiencies (operating cost per mile)
- Cost-effectiveness (transportation system user benefits)
- Transit-supportive land use patterns, policies, and programs
- Local financial commitment
- Economic development

Under the provisions of SAFETEA-LU, for each of these categories, a project receives a rating on a five-level scale from “high” to “low” with “medium-high,” “medium” and “medium-low” being the intermediate ratings. Each of these individual ratings is then combined into one overall project Summary Rating on a similar five-level scale from “high” to “low.” Only those projects rated “medium” or higher, overall, may be advanced through the New Starts project development process and be considered for funding. A “medium” overall project rating requires a rating of at least “medium” for project justification and for local financial commitment. If a project receives less than a “medium” rating for either project justification or local financial commitment, the highest overall Summary Rating it can achieve is a “medium-low.” A project must receive an overall rating of at least “medium” to be admitted into Preliminary Engineering or Final Design, or to receive funding. FTA no longer rates projects as “highly recommended,” “recommended,” or “not recommended” for funding. A project must still go through the administrative and political steps of the Executive and Congressional budget and appropriations process.

Another key variable is the local financial commitment, which focuses on the availability and reliability of local funding sources for capital construction and operating and maintenance costs, as well as the overall amount and share of project cost being requested from the federal Section 5309 New Starts program. Maryland has historically rated very well in these areas.

A project emerging out of the AA phase with a selected LPA that is in the state’s CLRP and receives at least a “Medium” overall New Starts rating is eligible to submit a “Request to Initiate Preliminary Engineering.” During the PE phase, the project will complete detailed planning and conduct preliminary engineering, complete the federal and state environmental review processes (environmental impact statement), and prepare project management and financial plans. At the completion of the PE phase, the New Starts Criteria package for the project is updated and submitted for rating and recommendation. After receiving a New Starts rating from FTA, the project would submit a “Request to Initiate Final Design.” In this phase, final construction plans are developed, and property acquisition and construction and equipment procurement occur that eventually lead to the start of operations. A key element of this phase is negotiating a FFGA between the sponsoring agency and FTA regarding the amount and payout schedule for the federal share of funds.

The CCT, Purple Line and Baltimore Red Line are potential New Starts projects in Maryland. None of these projects have selected an LPA and, therefore, none have submitted a “New Starts Criteria” package to FTA for rating. Since these projects have not been rated, they are not officially in the New Starts pipeline and have yet to submit a “Request to Initiate Preliminary Engineering.” The Purple Line and the Red Line Corridor Transit Study are in the AA phase, and the CCT project is at the stage of updating its environmental documentation and, subsequently, selecting the LPA for the transit component of the project.

The current SAFETEA-LU authorizing legislation expires in FY 2009 at which time it is expected that a successor authorizing legislation would be passed by Congress and signed into law. The candidate Maryland

New Starts projects, including the CCT, would be seeking capital funding authorized in this successor legislation.

### Capital Funding Strategy

A number of decisions will affect the amount and timing of the funding required for building and operating the CCT. First, the decision on the LPA which will establish the overall level of capital funding needed. It is possible that the LPA may be a modification of an alternative considered in this document in terms of location of the terminal stations, the number and location of stations and other components of the project definitions. The other decision is the timing of the construction and start of operations, including initiation and phasing/staging of construction. Major influences on the timing will be the availability of funding, especially the state funding, and the state priorities relative to the other New Starts projects.

MDOT will seek Federal Section 5309 New Starts funding for the LPA. While up to 80 percent of the project costs can be covered by the New Starts program, it is expected that MDOT will be seeking between 50 and 60 percent. The majority of the non-New Starts funding is expected to come from the Maryland TTF. Capital fund contributions, above right-of-way and related property and easement contributions, are expected from Montgomery County. Non-New Starts federal funding will be sought for various enhancements, such as trails and roadway, railroad and transit-oriented development improvements, where eligible.

Montgomery County has long recognized the importance of contributing to the CCT project. A number of right-of-way purchases and easement contributions are already in place by the county. And, a special task force of local officials and institutions has been convened by Johns Hopkins University, a local property owner and project stakeholder, for the sole purpose of exploring revenue options as contributions to the project.

The MTA will aggressively pursue private sources of funding where appropriate. At a number of stations areas, there is the potential for developer contributions for stations and the adjoining area, specifically at Crown

Farm, Decoverly, Quince Orchard, Metropolitan Grove (existing MARC station), Germantown and COMSAT.

As discussed earlier, a special session of the Maryland General Assembly enabled a number of revenue enhancements that include a \$400 million per year increase in revenue to the TTF in late 2007. In January 2008, the Governor announced that \$80 million was committed to the CCT.

It is expected that further TTF revenue increases will be pursued over the next several years to fund the New Starts projects as well as other priority transit projects in Maryland, including system preservation and MARC improvements. While one possible scenario is to increase revenue to the Maryland TTF, other jurisdictional or institutional revenue and funding mechanisms are possible, such as special transit improvement districts, or local option funding. It is expected that funding for the CCT LPA and other priority New Start Projects will be in place by 2011.

### O&M Cost Funding Strategy

The MTA is anticipated to operate the CCT. As is the case for existing MTA services, that portion of the annual operating and maintenance and associated costs not covered by fare revenues, i.e., the operating subsidy, would be funded by the TTF. As part of the State-level revenue enhancement for capital funding, other sources and mechanisms for providing the operating subsidy may be considered, including possible county contributions.

### Conclusions

The capital cost funding and annual operating cost subsidy for the CCT would be funded from a package of federal, state, county and possible private sources. It is expected that 50 to 60 percent of the capital funding will be sought from the federal New Starts program. While other federal, county and private sources will contribute to the remainder of the capital funding needs, the State of Maryland would be the principal source. Recent revenue increases and programmatic commitments will cover the funding needed to bring the project into final design. It is expected that further revenue increases and funding mechanisms will be in place by 2011 to fund the implementation and operations of the CCT LPA.





# Evaluation of Alternatives

## Introduction

This chapter presents information relevant to evaluating the I-270/US 15 Multi-Modal Corridor Study alternatives, drawing on information and analyses presented in the previous chapters.

The purpose of this chapter is to highlight the major differences in performance and impacts between the alternatives to support decision making for a locally preferred alternative. The selection of an alternative must be made carefully, balancing the effectiveness of the alternatives’ ability to meet the project’s transportation needs and other goals against the financial costs and environmental impacts. It is the role of the stakeholders – including residents, businesses, funding agencies, political representatives, civic groups and others – to build consensus finding the right balance of effectiveness, costs and impacts for the Corridor Cities Transitway (CCT) and the I-270/US 15 highway corridor improvements

To facilitate this decision-making process, the chapter is organized to cover the following major categories:

- *Effectiveness* – the extent to which an alternative accomplishes the purposes that the transportation improvements are intended to address
- *Comparative Environmental Effects* – the extent to which each alternative impacts the social, economic, and natural environment
- *Cost and Financial Feasibility* – the extent to which sufficient funding is available or can be developed to support the construction, operation, and maintenance of an alternative
- *Cost-Effectiveness* – the extent to which an alternative provides a level of benefits that is commensurate with its costs (and relative to other alternatives)
- *Equity* – the extent to which each alternative provides fair distribution of costs and benefits across various subgroups in the corridor

## Role of the Federal New Starts Criteria

The Section 5309 New Starts program is the Federal Transit Administration’s (FTA’s) primary program for providing financial support to locally-planned,

Table VI-1: New Starts Criteria

Mobility Improvements	Discussed in the Effectiveness section, under “Goal 2: Enhance Mobility,” as well as under the Equity Considerations sections
Environmental Benefits	Incorporated in various evaluation measures discussed in the Comparative Environmental Effects section
Operating Efficiencies	Operations and Maintenance (O&M) costs and travel time savings are among the measures analyzed in Chapter V, as well as within the discussion of project Cost-Effectiveness in this section
Cost-Effectiveness	FTA’s cost-effectiveness calculation is discussed in the Cost-Effectiveness section.
Transit Supportive Land Use Policies and Future Patterns/Economic Development Potential	Land use is discussed at the end of Chapter I and within Chapter IV, and is considered in this chapter in the discussion of “Goal 1: Supporting Orderly Growth”
Local Financial Commitment	Discussed in the financial analysis section included in Chapter V, and summarized in the Financial Feasibility section in this chapter

implemented, and operated fixed guideway transit major capital investments. As discussed in **Chapter V**, it is expected that FTA New Starts funds will be sought if either of the light rail transit (LRT) or bus rapid transit (BRT) alternatives is selected as a transit component of a locally preferred alternative for this project. The federal transportation legislation, Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), requires that proposed New Starts projects be justified based on several project justification criteria, including:

- Mobility improvements
- Environmental benefits
- Operating efficiencies
- Cost-effectiveness
- Transit supportive land use patterns/policies and economic development potential
- The local share of proposed costs and the financial capacity of the community to support them

**Table VI-1** indicates how the New Starts Criteria are reflected in the set of measures being analyzed in this chapter to evaluate the CCT transit alternatives and throughout this Alternatives Analysis/Environmental Assessment (AA/EA).

## Alternatives

The alternatives are discussed in **Chapter II** and listed in **Table VI-2**. There are two components – a highway component and a transit component. The highway component of the build alternatives consists of improvements to I-270 and US 15, including the addition of general-purpose and Express Toll Lanes<sup>SM</sup> (ETLs<sup>SM</sup>) and upgrades to interchanges and ramps. The difference between Alternative 6A/B and Alternative 7A/B is the inclusion in Alternative 7 of an additional ETL on I-270 between MD 121 and north of MD 80. The transit component (LRT or BRT on the CCT) footprint would be the same for both Alternatives 6A and 7A (LRT) and Alternatives 6B and 7B (BRT).

As discussed in **Chapter II**, Alternatives 6.1 No-Build Transit and 6.2 Transit TSM are included for the purposes of establishing a performance baseline to compare against the performance of BRT and LRT on the CCT, in accordance with the FTA guidelines for an Alternatives Analysis, and were not subjected to an environmental evaluation (**Chapter IV**). The AA analysis also includes Alternatives 6A/B and 7A/B.

The LRT and BRT components propose transit service on an exclusive guideway along a reserved corridor (CCT) in Montgomery County that has been preserved for this project in local master plans. LRT would use light rail vehicles on tracks on this alignment and BRT would use rubber-tired transit vehicles on the same alignment.

Table VI-2: Alternatives

ALTERNATIVE	HIGHWAY COMPONENT	TRANSIT COMPONENT
Alternative 1	No-Build	No-Build
Alternative 6.1	Alternative 6	No-Build
Alternative 6.2	Alternative 6	Transit TSM
Alternative 6A	Alternative 6	LRT
Alternative 6B	Alternative 6	BRT
Alternative 7A	Alternative 7	LRT
Alternative 7B	Alternative 7	BRT

## Effectiveness

The effectiveness of each alternative is best assessed by first understanding the intended objectives of the project. **Chapter I** presents the project’s purpose and need and calls for improvements to be made to the transportation system in the corridor to address the following transportation challenges:

- Growing traffic congestion on I-270 and US 15 throughout the corridor caused by growing population and employment in the region, and the lack of alternative routes for this important commuting and freight corridor
- Limitations on transit services and transit service performance
  - Transit parking lots at Shady Grove Metrorail station, as well as a number of MARC commuter rail stations are operating at capacity
  - MARC service is limited in its service frequency, does not provide “reverse commute” service, and does not serve a number of growth centers within Montgomery County
  - Current bus service operates in mixed traffic, subject to congestion, resulting in slow travel speeds



In order to more effectively evaluate the proposed transportation strategies and alternatives, the original project team, with the input of the I-270/US 15 focus group, developed a list of five goals for this project:

**Goal 1: Support Orderly Economic Growth**  
*Support the orderly economic development of the I-270/US 15 Corridor consistent with the existing local government land use plans and the State’s Smart Growth Policies.*

The transitway components are generally compatible with the local transportation and land use plans for all jurisdictions in the corridor. County and local plans have been developed to support the changes in development and traffic patterns that are expected to result from future growth in a corridor that includes both a transit improvement on the CCT and an expansion of highway capacity on the I-270/US 15 Corridor.

The build alternatives are also compatible with the Maryland Smart Growth Initiative, as explained in **Chapter IV**.

The CCT has been included in Montgomery County’s master plans as well as individual sector plans since the 1970s. As such, many of the station areas are targeted for transit supportive growth and development. These include both recent developments, such as King Farm in Rockville, a residential development with the alignment built into the road network; and planned development such as that anticipated for Crown Farm and Metropolitan Grove. With its bikeway component, the CCT improvements are also supported by Montgomery County’s *Countywide Bikeways Functional Master Plan*. Some details of the transit plans, particularly the location of the maintenance facility, may not be compatible with all local plans. The *Shady Grove Sector Plan*, for example, recommends that the maintenance facility be located outside of the Shady Grove area, and calls for specific configurations of the Shady Grove station, when station designs have not yet been determined at that level of detail.

Highway improvements to the I-270/US 15 corridor, including roadway widening, are recommended in the master plans of both Montgomery and Frederick Counties. The ETLs are not included in these plans,

which call for improvements involving only general purpose or high occupancy vehicle (HOV) lanes. HOV lanes and ETLs are types of managed lanes. Managed lanes include many configurations and/or restrictions to maximize highway facility usage, such as truck-only lanes, ETLs, HOT (high occupancy toll) lanes and HOV lanes among others. The 2002 Draft Environmental Impact Statement (DEIS) examined Alternatives 3A/B and 5A/B/C that included additional HOV lanes and Alternatives 1, 2, and 4A/B that included the existing HOV lanes. The ETLs of Alternatives 6A/B and 7A/B represent an operational change to traffic flow and usage when compared to Alternatives 3A/B and 5A/B/C, and do not represent a change in the number of traffic lanes. Since the concept of ETLs is fairly new, it has not been addressed in Montgomery County master plan updates. However, because the levels of service (LOS) on the corridor’s general-purpose lanes would be improved under Alternatives 6A/B and 7A/B, and ETLs are one type of managed lanes like HOVs, the ETLs should not be considered to be in conflict with orderly economic growth outlined in local and county growth plans.

The ability to support orderly economic growth should not be a differentiating factor among the build alternatives because all four build alternatives include improvements to the same highway corridor, involve ETLs, and propose transit improvements on the same alignment.

**Goal 2: Enhance Mobility**  
*Provide enhanced traveler mobility through the I-270/US 15 Corridor.*

Mobility is the ability of individuals to get from one location to another. Private automobiles provide excellent mobility in that they can take the driver virtually anywhere in the study area. However, not everyone is able to drive a car, has access to one, or chooses to travel via private automobile for their trip. Those that drive during peak commuting hours are frequently caught in slow-moving traffic and often face significant parking costs at urban destination centers. Transit serves a number of destinations and is open to a wider range of travelers with limits on mobility options, such as residents with low incomes, those who

are elderly or disabled, or the young. When traveling on an exclusive guideway, such as rail tracks or a busway, transit is able in many cases to provide faster travel times than driving.

The transit components of the alternatives serve different, although overlapping, travel markets from the highway improvements, and are therefore discussed separately.

**Transit**  
The ability of an alternative to attract new riders is a good measure of its effectiveness in providing a mobility improvement that works for people. Ridership estimates from the travel demand model analysis are shown in **Table VI-3**, along with estimates of travel time savings for users, expressed as “annual user benefit hours”. Also shown is the number of annual new transit trips projected for each alternative.

LRT is projected to attract 10-15 percent more riders to CCT stations than BRT, making ridership an important differentiator between those transit build alternatives. User benefit hours, which represent the travel time saved by all travelers of the transportation system as compared to Alternative 6-TSM, are about seven percent higher for BRT compared to LRT. The higher ridership for LRT is due in part to the attractiveness of LRT over rubber-tired modes. It is also related to the slightly faster travel speeds.

An important difference between LRT and BRT is related to local bus operations. Alternatives 6A/B and

7A/B incorporate local feeder bus routes that bring passengers from residential areas to CCT stations. With LRT, these feeder bus routes will typically terminate at an LRT station, requiring passengers to transfer. With BRT, the buses can join the guideway to run express on the CCT alignment, eliminating the need for a transfer. The effects of this advantage are reflected in the ridership and user benefit calculations for the BRT alternative.

Because the LRT and BRT use the same alignment, with stations in the same locations, other transit service factors would be identical for the alternatives, including the availability of parking, residential housing and employment located within walking distance of stations.

Overall, therefore, the LRT alternatives (6A and 7A) have a higher effectiveness than the BRT alternatives (6B and 7B) in enhancing mobility – providing greater benefits to riders, and providing a service that is attractive to a greater number of users.

**Highway**  
Level of service for highway improvements provides a good measure to assess the mobility effectiveness for roadway users. The I-270 and US 15 roadways are forecasted to experience traffic congestion under the No-Build Alternative in year 2030 for the southbound AM peak hours, for the I-270 roadway segments north of Father Hurley Boulevard (AM and PM peak directions), and for several US 15 segments (both AM and PM peak directions).

**Table VI-3: Ridership, User Benefit Hours, and Annual New Transit Trips**

ALTERNATIVE	TOTAL DAILY GUIDEWAY BOARDINGS	ANNUAL USER BENEFIT HOURS (TRAVEL TIME SAVINGS)	ANNUAL NEW TRANSIT TRIPS
Alternative 6A w/LRT	30,000	2,070,000	2,679,600
Alternative 6B w/BRT	26,000	2,220,000	2,864,400
Alternative 7A w/LRT	30,000	2,100,000	2,710,400
Alternative 7B w/BRT	27,000	2,250,000	2,895,200

*Note: User Benefit Hours and Annual New Transit Trips are reported as compared to Alternative 6-TSM.*





With the proposed highway improvements (Alternatives 6A/B and 7A/B), the Montgomery County I-270 mainline sections of I-270 would show improving conditions during the 2030 AM and PM peak periods. The improvement is due to the ETLs providing relatively congestion-free travel speeds past existing bottlenecks caused by entering/exiting interchange traffic. ETL usage by former general purpose lane vehicles reduces the number of vehicles in the general purpose lanes, thus improving overall operating conditions. In northern Montgomery County (north of MD 121), Alternative 7A/B further improves roadway congestion by offering a second ETL for motorists to choose a reliable travel time versus the potentially congested general purpose lanes.

With the proposed highway improvements (Alternatives 6A/B and 7A/B), the Frederick County mainline sections of I-270 will also show improving conditions during the 2030 AM and PM peak periods. Although the two build alternatives both add highway capacity, they both experience LOS F conditions for all or a portion of highway segments from the Montgomery County line to MD 85. Alternative 7A/B would result in better overall traffic operational conditions due to the additional ETL lane over Alternative 6A/B. The proposed traffic volumes of the two build alternatives are relatively close in their forecasts with Alternative 7A/B having approximately five percent more ADT than Alternative 6A/B but providing approximately 22 percent more vehicle capacity.

The general expectation along US 15 through the City of Frederick is that the build alternative traffic conditions will improve over the No-Build condition and remove all LOS F conditions by the year 2030. Alternative 7A/B will experience no LOS E segments while Alternative 6A/B will experience two LOS E segments (Jefferson Street to US 40/MD 144 and north of Biggs Ford Road). Each of the build alternatives yield similar results along US 15 due to the identical improvements there.

The overall traffic analyses show that I-270 and US 15 will continue to experience congested segments (with the proposed build alternatives) to 2030 and beyond due to the existing and projected growth along the

corridor. However, the build alternatives provide congestion relief for segments of I-270 and US 15 as well as for those motorists who choose to travel in the ETLs. In addition, the projected traffic operations would be worse under the No-Build Alternative. A review of the difference in mainline segment miles that operate under LOS F conditions between the build alternatives and the No-Build Alternative, as indicated in **Table VI-4**, illustrates the congestion relief for the general purpose lanes.

Alternative 6A/B would provide a 13-mile total reduction in mainline segments operating at LOS F (five miles reduction northbound, eight miles reduction southbound). Alternative 7A/B would provide a 30-mile total reduction in mainline segments operating at LOS F (12 miles reduction northbound, 18 miles reduction southbound). Therefore, Alternative 7A/B offers the greatest reduction in LOS F mileage along the corridor when compared to the expected No-Build conditions and offers the best alternative to enhance roadway user mobility within the project study area.

Goal 3: Improve Goods Movement

*Facilitate the movement of goods within and through the I-270/US 15 Corridor and improve the delivery of services in support of the regional and local economies.*

The build alternatives would enhance goods movement along the I-270/US 15 corridor by improving LOS during peak travel hours on both the ETLs and the general-purpose lanes. Freight and other commercial carriers would be able to use the ETLs and the general-purpose lanes depending on how valuable the time savings is to a particular trip. Due to the improved LOS conditions Alternative 7A/B offers versus Alternative 6A/B, Alternative 7A/B provides the most improvement in traffic operations throughout the I-270 and US 15 roadway corridor.

Goal 4: Preserve the Environment

*Deliver transportation services in a manner that preserves, protects, and enhances the quality of life and social, cultural and natural environment in the I-270/US 15 Corridor.*

Table VI-4: I-270/US 15 Level of Service Improvements

	ALTERNATIVE 1 2030 NO-BUILD	ALTERNATIVES 6A/B	ALTERNATIVES 7A/B
Year 2030 Mainline Segment Mileage of LOS F Conditions*			
I-270/US 15 Northbound (PM Peak Hour)	20	15.8	11.6
I-270/US 15 Southbound (AM Peak Hour)	23.2	15.5	5.7
Total Mileage of LOS F Segments	43.2	31.3	17.3
Year 2030 Mileage Reduction of LOS F Segments from Alternatives 1 (No-Build) and 2 (TSM/TDM)			
I-270/US 15 Northbound (PM Peak Hour)	N/A	4.2	8.4
I-270/US 15 Southbound (AM Peak Hour)	N/A	7.7	17.5
Total Mileage Reduction of LOS F Segments	N/A	11.9	25.9

\*I-270/US 15 Corridor within project limits is approximately 32.1 miles. The northbound and southbound lanes account for a total length of 64.2 miles.

The build alternatives are designed to enhance quality of life and the environment by reducing congestion, increasing mobility, and encouraging the use of more environmentally-friendly forms of transportation (i.e., transit).

The highway and transit alignments were designed to follow existing roadway and transit corridors to reduce impacts to the natural and social fabric of the study area. The transitway is planned to follow an alignment that has been identified for over 30 years, resulting in a relatively low impact on parks, homes and other forms of development for a project of its size.

As **Chapter IV** indicates, each of the build alternatives would have some impacts on the environment. However, the No-Build Transit (6.1) and Transit TSM (6.2) Alternatives have impacts as well, including increased congestion and air pollution and reduced travel opportunities in the study area, reduced potential for economic development, and reduced opportunities for use of the trails that are proposed adjacent to the transitway. **Table VI-11** summarizes the principal environmental differences among the build alternatives.

It is the role of stakeholders, including residents, businesses, project sponsors, local governments and politicians, to decide if the benefits of the build alternatives outweigh the resulting environmental impacts.

Because the build alternatives are similar and have identical footprints, there is little to differentiate them in terms of environmental benefits. A comparison of specific impacts is provided on the following pages.



Goal 5: Optimize Public Investment

*Provide a transportation system in the I-270/US 15 Corridor that makes optimal use of the existing transportation infrastructure, while making cost-effective investments in facilities and services that support other project goals.*

Each of the build alternatives would increase the efficient use of the transportation system by reducing travel times and encouraging the use of transit.

CCT and Bikeway Investment

The existing CCT corridor represents a major community investment in transportation infrastructure. The land within the corridor, parts of which would have been developed for residential and/or other use, has instead been set aside for decades. Converting it from its largely-unused current condition to an exclusive transitway and bicycle/pedestrian path would allow Montgomery County to maximize the value of this asset to the community.

Both the LRT and BRT alternatives would provide a high level of transit service that would enable travelers to save time by avoiding congestion during peak hours. Each of the transit build alternatives would also provide a bikeway adjacent to the transitway. Because of the cost differential, however, the BRT alternatives rank much higher than the LRT alternatives in terms of value provided per dollar. As explained in the section on Cost-Effectiveness, the capital costs of the LRT (\$777.5 million) are estimated to be 73 percent higher than the cost of implementing BRT (\$449.9 million). Operating costs for the LRT alternatives are about five percent higher than BRT, which includes the cost of operating feeder and other background bus services. Because the connectivity benefits of the bikeway are the same under each build alternative, and benefits of BRT and LRT are similar (for example, the travel time savings for LRT is only four percent higher than for BRT), the relative benefit per dollar of the BRT alternatives (Alternatives 6B and 7B) is higher than that of the more expensive LRT alternatives (Alternatives 6A and 7A).

Highway Investment

The proposed Alternatives 6A/B and 7A/B highway improvements are identical in the amount of roadway to be installed and right-of-way needed; the differences are a result of the operational configuration of the ETLs. From near the MD 121 interchange to north of MD 80, the two highway alternatives differ in the number of ETLs operating. Alternative 6A/B has one ETL per direction and Alternative 7A/B has two ETLs per direction. As a result, the proposed cost for each alternative is similar with an estimated total project cost of \$3.9 billion. This cost would be higher if the facility were to be built on new alignment with the same configuration of the existing plus proposed lanes and interchanges, especially the cost to purchase new right-of-way. The overall project cost will continue to be evaluated if a build alternative is selected for implementation.

Alternatives 6A/B and 7A/B will encourage further carpooling and transit usage in the corridor by providing connections to intermodal transfer facilities. The ETLs will provide a reliable travel time from just north of MD 80 southward to Rockville (south of I-370), the Shady Grove Metrorail station and eastward towards eastern Montgomery County and Prince George’s County (via the Intercounty Connector tolled roadway). A carpool vehicle on the ETLs would not only experience reduced travel time but also the occupants would share commute costs (tolls, fuel and parking charges), reduce the number of peak period vehicles using the highway, lower the amount of highway congestion on the general purpose lanes, and lower the amount of highway infrastructure needed to address all of the general purpose lane congestion. The ETLs, with their potential for higher carpooling usage, would be able to transport a higher number of people than other lane types.

Development Impacts

In addition to mobility benefits, the public stands to gain from the development opportunities presented by the project. The development benefits arising from the build alternatives include increasing the value of existing development as well as enhancing development opportunities, particularly near stations. The No-Build Transit (6.1) and Transit TSM (6.2) Alternatives, in

contrast, are expected to have a dampening effect on development in the corridor due to the increasing traffic congestion.

The enhanced development value of the build alternatives is expected to result both from improved accessibility and from the public investment in local urban design (such as station design). Some properties may lose value, particularly those that would be adjacent to a new highway or transitway, which would be subjected to noise or visual impacts, or might lose part of their yards. Other properties, particularly those within walking distance to station areas, may gain in value.

The economic effects discussion in **Chapter IV** of this document indicates that the study area generally can expect land values to increase near existing or proposed transit stations, especially for employment centers and light commercial and industrial centers. These positive impacts are expected to be similar for both of the LRT and BRT alternatives, with a slight advantage for the LRT alternatives. LRT may provide a higher perception of permanence among developers than rubber-tired transit modes, and may therefore have an advantage in attracting developers to capitalize on the accessibility improvements provided at station areas. In addition, LRT would create more new jobs (roughly 3,800 average annual new jobs during project construction with LRT compared to 3,400 under the BRT alternatives).

Considering the highway component, the accessibility analysis has shown that increasing the capacity of I-270 and US 15 will likely serve to facilitate further economic and land development in the project area. Areas in and around the City of Frederick and on the urban fringe in northern Montgomery County are most likely to experience increased residential and retail land development pressure as a result of project accessibility improvements. The ETLs, by improving capacity on the crucial link between these areas and the employment centers in Montgomery County, would serve to facilitate additional land development on the urban periphery if current trends continue. A comparison between the ETL alternatives shows that Alternatives 7A and 7B tend to increase accessibility and development potential better than Alternatives 6A and 6B, although the differences between them are slight.

Considering both the highway and transit components, Alternative 7A, the combination of LRT and two ETLs each direction between MD 121 and north of MD 80, has the greatest potential development impact. This is due to Alternative 7A having the largest accessibility benefit for the highway improvements combined with LRT generating a greater potential for transit-oriented development (TOD) along the CCT alignment than BRT due to perceptions of alignment and station permanence. While Alternative 7B improves overall accessibility more than Alternative 7A, BRT’s accessibility advantage results primarily from users being able to make a one-seat ride directly to their destinations. This caveat of BRT’s accessibility benefits means BRT may primarily serve to enhance access to existing or planned residential and employment developments rather than providing stimulation for creating new TOD that is possible with LRT.

Comparative Environmental Effects

Detailed information on the environmental impacts of each alternative is presented in **Chapter IV**, and a summary of the impacts of Alternatives 6A/B and 7A/B is presented in **Table S-2**. Alternatives 6A/B and 7A/B would be constructed primarily along existing transportation corridors; therefore, impacts are generally small for a project of this size. In addition, Alternatives 6A/B and 7A/B have identical limits of disturbance (physical footprints), limiting the impact differences between the alternatives. A brief discussion of the differences in impacts between alternatives is presented here. **Table VI-11** also presents differences in environmental impacts between the alternatives.

As discussed in **Chapter IV**, potential impacts of the alternatives are based on preliminary engineering and field investigations and will change during continued planning and final design. As an example, between 26 and 35 potential residential displacements in the Fox Chapel neighborhood near Middlebrook Road, identified in the 2002 DEIS, would be eliminated based on the Maryland State Highway Administration’s (SHA’s) proposed typical section reduction and the use of retaining walls. SHA presented the mitigation plan to the public on August 25, 2003. The Fox



Chapel neighborhood mitigation plan is included in Alternatives 6A/B and 7A/B. Minimization and mitigation measures will continue to be developed to reduce impacts to resources.

The location for the transit O&M facility has not been decided. As described in **Chapter II**, there are five locations currently under review. Three are being evaluated for either LRT or BRT use. One site is being evaluated for BRT operation only, and another is appropriate only for LRT operation. The impacts resulting from the selection of a maintenance site are discussed separately in many sections below to assist with decision-making.

Land Use and Zoning

Some county and municipal master plans and zoning have been updated to take into account changes to the alternatives since the 2002 Draft Environmental Impact Statement (DEIS), although some plans have not. The Montgomery County Master Plan calls for HOV lanes rather than ETLs and the Clarksburg Master Plan limits the maximum I-270 widening to six total lanes. In addition, local land use plans and zoning have been updated to accommodate, and in some cases maximize, the potential development impacts that are likely to result from the proposed highway and transitway improvements.

With no difference in the right-of-way to be used by the highway and transitway improvements, and the alternative use of ETLs rather than HOV lanes as the managed lane type, there is no differential between the build alternatives with regard to conforming to local land use and zoning.

Displacements

Estimated displacements, summarized in **Table VI-5**, are the same for Alternatives 6A/B and 7A/B because the physical footprints are identical. The residential and business displacements are presented in detail in **Chapter IV** in **Table IV-11** and **Table IV-12**. They are given as ranges because the location has not been chosen for an O&M site. Retaining walls can be used in many areas to avoid or reduce the number of homes

and businesses that need to be relocated. Minimization of proposed shoulder widths and modifications of the proposed MD 117 direct access ramps would also reduce the number of displacements required for the highway improvements.

Displacements related to the transit components vary depending on the site selected for an O&M facility (**Table VI-6**).

Neighborhoods and Social Environment

Other than the impact from displacements discussed above, the impacts of the alternatives on neighborhoods and social cohesiveness are expected to be minimal, with little difference between alternatives. This is a result of the fact that the highway and transit components are being built along existing corridors, which are on the periphery of existing neighborhoods.

Parkland and Other Community Facilities and Services

Park impacts for the build alternatives are discussed in detail in **Chapter IV**. Potential impacts include loss of acreage and loss of buffer landscapes adjacent to the highway and transitway. An alignment shift through the Monocacy National Battlefield has limited the impacts to the west side of I-270 only, avoiding impacts to the more historically important sites east of the highway. There is no difference in parkland impacts between the alternatives. None of the proposed transit O&M facilities would result in parkland impacts.

Economic Environment and Development Potential

Alternatives 6A/B and 7A/B would enhance the economic development potential in the study area by improving accessibility. The development benefits would be similar for all build alternatives, as the proposed interchange locations, bikeway alignment, and transit stations are the same. Slight differences would occur in the level and location of development benefits.

Table VI-5: Displacements Summary

LOCATION	MAXIMUM DISPLACEMENTS without minimization	MINIMIZED DISPLACEMENTS with minimized shoulders and/or retaining walls <sup>1</sup>
Total Highway Residential Displacements	251 residences	9 – 74 residences
Total Transitway Residential Displacements	5 - 9 residences <sup>2</sup>	5 - 9 residences <sup>2</sup>
Highway and Transit Displacements in Montgomery County	240 - 244 residences	12 – 83 residences
Highway and Transit Displacements in Frederick County	16 residences	0 - 1 residence
Total Highway and Transitway Residential Displacements	256 - 260 residences	12 – 83 residences
Total Highway Business Displacements	10 -11 businesses	2 - 4 businesses
Total Transitway Business Displacements	3 - 32 businesses <sup>2</sup>	
Total Highway and Transitway Business Displacements	13 - 43 businesses <sup>2</sup>	5 - 36 businesses <sup>2</sup>

<sup>1</sup>Preliminary impacts are based on both a 25-foot and a 10-foot buffer beyond the proposed cut/fill line or the proposed retaining wall respectively, as well as an assessment of minimum/maximum structure displacements for townhouse units.

<sup>2</sup>There is a range of potential displacements since only one or possibly none of the O&M sites listed in **Table VI-6** will be chosen.

Table VI-6: O&M Facility Displacements

LOCATION	O&M SITE APPROPRIATE FOR LRT OR BRT	RESIDENTIAL DISPLACEMENTS	BUSINESS DISPLACEMENTS
Shady Grove Site 1D – South of Redland Road	LRT and BRT	None	29*
Shady Grove Site 6 – Crabbs Branch Way	BRT only	None	None
Metropolitan Grove Site 4/5 – PEPCO Transmission Lines	LRT only	4 residences	None
Metropolitan Grove Site 6 – Police Vehicle Impound Lot	LRT and BRT	None	2 businesses: the Police Forensics Lab and the Montgomery County Police Vehicle Impound Lot
Communications Satellite, Inc. (COMSAT) Area Site 5 – Observation Drive	LRT and BRT	1 farmhouse (with outbuildings)	None

\*Displaced businesses are located in a strip mall and include multiple shops and restaurants, a storage facility, and several vehicle and machine maintenance shops.



Transit

LRT may have a somewhat higher economic development benefit than BRT for the following reasons:

1. LRT may be perceived by its patrons as a more attractive mode, with a better ride quality, faster boarding and alighting, and a slightly faster travel time than BRT.
2. The LRT alternatives show ridership up to 10-15 percent higher than the BRT alternatives, which could enhance TOD potential.
3. The LRT alternatives could provide a higher number of annual construction jobs than the BRT alternatives (3,800 average annual new jobs during project construction with LRT vs. 3,400 with BRT).

Highway

The highway components are likely to have slightly differing development effects. Both Alternatives 6A/B and 7A/B would make travel along I-270 and US 15 faster and thus reduce commute times to employment centers in southern Montgomery County. Reduced commute times will tend to encourage continued land development on the urban periphery, including in northern and western Frederick County, and eastern West Virginia. To the extent that Alternative 7A/B would reduce travel times to a greater degree than Alternative 6A/B, Alternative 7A/B would generate somewhat larger increases in consumer, retail, and job

accessibility within the corridor, and would also be more likely to encourage development in areas further away from the urban periphery.

Historic Resources

There is no difference between the alternatives with respect to cultural resources. Ten historic properties were identified within the area of potential effect for Alternatives 6A/B and 7A/B. The build alternatives were found to have an adverse effect on eight of these resources and no adverse effect on two properties. The highway and/or transitway would require right-of-way from seven properties, and noise impacts will affect four resources. No identified archaeological sites will be impacted by the project with the possible exception of unknown sites that may exist in the Monocacy National Battlefield.

Natural Environment

There is no difference between Alternatives 6A/B and 7A/B with respect to natural environmental impacts. The impacts of the O&M Facilities sites on natural resources vary depending on the location of the O&M facility selected, as well as the layout of the facility’s components. The lowest level of impact would occur at Shady Grove Site 1D, which is largely on developed land. The greatest level of impact to natural resources would occur at Metropolitan Grove Site 4/5, which is primarily wooded, with a few clearings around homes.

Hazardous Materials/Waste Sites

No severely contaminated sites were identified in the corridor. Eighteen sites were found to have documented or suspected modest contamination. Additional investigation is recommended to determine the presence of hazardous materials prior to the selection of a preferred alternative. Because of the identical footprint of the build alternatives, the differences between alternatives would arise only in the selection of the transit O&M site.

Air Quality

The air quality analysis used data from the travel demand model to estimate the total emissions produced under the No-Build and under each of the build alternatives. The regional impact of Alternatives 6A/B and 7A/B was predicted to cause changes to regional

pollutant levels ranging from an increase of 1.1% to a reduction of -0.3% (see **Chapter IV, Table IV-28**). Based on these changes, the project alternatives are predicted to have a minimal effect on regional pollutant levels, with Alternatives 6A/B performing slightly better than Alternatives 7A/B.

**Table IV-28** shows that in 2015 Alternatives 7A and 7B were found to encourage a higher level of vehicle use, resulting in higher levels of emissions of carbon monoxide (CO), nitrogen oxides (NO<sub>x</sub>), particulate matter (PM), and volatile organic compounds (VOC) compared to Alternatives 6A and 6B. In 2030, Alternatives 7A and 7B were found to have higher levels of PM, and lower levels of CO and NO<sub>x</sub> compared to Alternatives 6A and 6B. Differences in 2030 VOC levels between the No-Build, Alternative 6A/B and Alternative 7A/B are not considered significant.

The air quality analysis described in **Chapter IV** determined that the build alternatives meet all the project level PM<sub>2.5</sub> conformity requirements, and that the project will not cause or contribute to a new violation of the PM<sub>2.5</sub> National Ambient Air Quality Standards (NAAQS). The project area is classified as an attainment area for PM<sub>10</sub>.

Similarly, no violations of the one-hour and eight-hour CO levels were predicted. The project build alternatives may result in increased exposure to mobile source air toxics (MSAT) emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

Noise and Vibration

The two LRT alternatives, Alternatives 6A and 7A have higher noise impacts than the BRT alternatives, with little overall difference between the two highway alternatives. Vibration levels were not found to cause impacts for either the LRT or BRT alternatives. **Chapter IV** describes the noise abatement criteria utilized in the impact analysis, which define whether a change in noise levels represents no impact, or a moderate or severe impact.

Transit

Twenty-five noise monitoring sites were analyzed for impacts of the LRT or BRT on the CCT alignment. Following FTA criteria, LRT was found to have moderate noise impacts at four locations. BRT was found to result in no noise impacts at any of the 25 locations.

Of the five locations that were considered for locating a transit O&M facility, three locations are found to be potentially sensitive to noise from activities that would occur there due to the proximity of residences: on Redland Boulevard near the Shady Grove Redland Road site; and along Wicker Place and Game Preserve Road, both near the PEPCO Transmission Lines site. While the existing noise levels at these three locations are high enough that the transit yard would not cause a noise impact, the nighttime yard activities might require mitigation. It is recommended that noise-producing activities at the O&M site be limited to daylight hours.

Highway

The results for the two highway components varied by location, but were very similar overall. Alternative 6A/B was found to impact 40 of the 55 highway sites studied, including 28 residential areas and 12 non-residential areas including parks, one hotel, a cemetery and two museums. Of these, six sites were projected to experience noise level increases of 10 decibels or more. Alternative 7A/B was found to impact 39 of the 55 highway sites studied, including 27 residential areas and the same 12 non-residential areas impacted by Alternative 6A/B. Of these 39 impacted sites, seven sites were projected to experience noise level increases of 10 decibels or more.

Energy

The energy analysis detailed in **Chapter IV** looks at two components of energy use: the energy required to construct the project alignment, and the change in energy usage relating to daily vehicular travel in the region. In terms of energy used for project construction, the Alternatives 6A and 7A use less energy for construction.





Each of the build alternatives has less than a one percent effect on regional transportation energy consumption. Alternative 7 will encourage more vehicle miles traveled (VMT), resulting in higher energy usage than Alternative 6. Alternative 6B causes the lowest increase in energy usage for regional transportation. BRT appears to use less energy in its daily operations (443 BTUs) than LRT, which would use 479 BTUs to operate LRT and its associated feeder bus service daily. Alternative 6B is therefore predicted to have the smallest relative increase in transportation energy of all the build alternatives.

Visual and Aesthetic Quality

The project will introduce new elements into the visual landscape such as an electrified transit railway (LRT), additional buses, additional lanes, structures, park and ride lots, noise walls and transit stations. Where possible, these elements will be designed to be compatible and integrated with the environmental context of their locations. As discussed in the 2002 DEIS and **Chapter IV**, the extent of the visual impacts of these new elements will depend on the existing visual character of each specific area, as well as surrounding land uses.

Transit

In general, the BRT alternatives will have less of a visual impact than the LRT alternatives. Most elements introduced by the transit improvements will be the same for BRT and LRT, including stations, park and ride lots, and elevated sections of transitway. The LRT option would introduce more elements to the landscape than the BRT options, largely due to the overhead catenary system and supporting aerial structures that would be present along the transitway.

Highway

In most cases, the highway improvements are proposed in areas where there is already significant existing infrastructure. There will be little overall difference between the visual impact of the highway alternatives.

Indirect and Cumulative Effects (ICE) Analysis

The LRT and BRT alternatives, as noted above, will have similar development impacts, largely concentrated in station areas, and it is possible that Alternative 7A/B will encourage more development on the urban periphery than Alternative 6A/B. Residential and commercial development produces secondary impacts by placing additional demands or development pressures on parklands, cultural resources, water resources, terrestrial habitat, and farmlands.

The ICE Analysis (*Indirect and Cumulative Effects Analysis Technical Report*, SHA, March 2009) for Alternatives 6A/B and 7A/B agreed with the conclusions of the 2002 Secondary and Cumulative Effects Analysis (SCEA) for Alternatives 3A/B, 4A/B and 5A/B/C that “... in select locations the region would experience future development beyond that planned for Montgomery and Frederick counties.” According to the analysis, this additional development would occur “... regardless of the alternate, including the No-Build.” As explained in **Chapter IV.L**, there are no indications that the conclusion of the 2002 SCEA has changed, and the ICE Analysis completed in 2009 supports this conclusion.

Cost and Financial Feasibility

There are two types of costs associated with the build alternatives – capital costs and O&M costs. Capital costs include one-time costs spent on right-of-way and infrastructure construction, as well as costs spent on items, such as rail cars or buses, that will last many years. The highway capital costs consist of right-of-way, construction of the roadway (labor and materials), and installation of signs and safety barriers, as well as planning and design services. Transit capital costs also include right-of-way, roadway or track installation, and planning and design services as well as the purchase of LRT and BRT vehicles, signaling and power systems, station and maintenance facility construction, and other elements.

In contrast, O&M covers ongoing cost items, such as labor expenses for bus drivers, transit system managers, and roadway/transitway and vehicle maintenance crews. Materials costs are also part of O&M expenses and include electricity to power LRT vehicles and signal systems, diesel or other fuels for buses, lubricants for oil changes, tires, etc.

Table VI-7: Estimated Capital Costs (in millions of 2007 dollars)

ALTERNATIVE	HIGHWAY*	TRANSIT	TOTAL
Alternative 6A - LRT	\$3,879	\$777.5	\$4,656.5
Alternative 6B - BRT	\$3,879	\$449.9	\$4,328.9
Alternative 7A - LRT	\$3,879	\$777.5	\$4,656.5
Alternative 7B - BRT	\$3,879	\$449.9	\$4,328.9

*\*Highway cost estimates are identical for Alternatives 6 and 7, as they have identical footprints and an equal amount of paving. Costs represent a “snapshot” in time for comparison. Project costs are subject to change based on world and local financial markets.*

Capital Costs

As **Table VI-7** shows, the CCT LRT transit mode option is approximately 73 percent more expensive than the BRT option in terms of capital costs. This is due primarily to the need for continuous track, power, and signal systems for LRT.

The estimated cost is the same for both highway Alternatives 6A/B and 7A/B, as they have require an identical amount of land and paving. Each of the alternatives includes the same highway and ETL access points and interchange improvements. As a result, the capital costs are the same. In terms of capital expenditures, Alternatives 6A and 7A with the LRT option are more costly than Alternatives 6B and 7B with the BRT option.

Estimated O&M costs for the transit components of the alternatives are shown in **Table VI-8**. Both transit alternatives involve new high quality transit service along an exclusive guideway that separates the transit service, either LRT or BRT, from other forms of transportation between the Shady Grove Metrorail

Station and COMSAT, and include adjustments to the background bus service.

LRT is about five percent more expensive in terms of operating costs when compared to BRT. While LRT operation along the CCT alignment is about 50 percent more expensive than BRT operation, LRT provides substantial savings in the feeder bus service. Feeder bus routes that continue along the transitway in the BRT alternative simply terminate at a CCT station under the LRT alternatives.

Highway O&M costs include minor repairs and routine paving, snow removal, mowing and other maintenance. These costs would be similar for the two highway alternatives, and are minor in comparison to transit O&M costs.

Financial Feasibility

In general, the lower the cost of a project, the easier it is to fund. The CCT transit improvements have been included in the current financially-constrained Long-Range Transportation Plan (CLRP) for the National

Table VI-8: Annual Estimated Transit O&M Costs\*

ALTERNATIVE	MAINLINE TRANSIT SERVICE	BACKGROUND BUS SERVICES	TOTAL
LRT	\$26,985,700	\$1,143,400	\$28,129,000
BRT	\$17,907,850	\$8,950,950	\$26,859,000

*\*Costs are expressed in terms of cost increases above the Alternative 6.1 No-Build Transit.*



Capital Region as a planning project. The highway improvements with widening and HOV – where HOV is one form of managed lanes under consideration – are also included in the CLRP as a planning project. In the fall of 2007, the Governor and Maryland General Assembly committed an additional \$80 million to the CCT in a legislative package of new revenues to be collected from Maryland residents and dedicated to transportation as well as the Maryland General Fund. This funding will be appropriated through the 2009-2014 Consolidated Transportation Program (CTP) to be enacted during the 2009 General Assembly session.

Highway and transit projects traditionally have different funding sources and have different funding needs and opportunities.

Transit

As discussed in **Chapter V**, the capital cost and annual operating cost subsidy for the CCT would be funded from a package of federal, state, county and possibly private sources. It is expected that at least 50 percent of the capital funding will be sought from the federal New Starts funding with the remainder of capital costs being contributed by the State of Maryland as well as other federal, county and private sources.

FTA’s New Starts funding program is the principal source of federal funding for major transit projects. There is a limited amount of funding available nationally, and most projects therefore receive no more than 50 percent of the project’s capital costs from New Starts. A number of other federal programs have the potential to provide some funding for enhancement, and associated components of a CCT locally preferred alternative (LPA) and will be explored further once the LPA is selected.

Beyond state and federal funds, the remainder of the funding would come from county and possible private-sector sources. It is expected that Montgomery County would provide capital funds for construction of the CCT in addition to right-of-way contributions, easements, and ancillary roadway and trail facilities.

The private sector is also a potential source of funding, especially in areas that are undergoing land development changes or expected to in the future. The Maryland

Department of Transportation (MDOT), Washington Metropolitan Area Transit Authority (WMATA), and Montgomery County have recent experience in both joint development and value capture mechanisms, which will be explored for this project.

Operations & Maintenance Funding for Transit

The MTA is anticipated to operate the CCT service. As is the case for existing MTA services, that portion of the annual O&M and associated costs not covered by fare revenues, i.e., the operating subsidy, would be funded by the Maryland Transportation Trust Fund (TTF). As part of the State-level revenue enhancement for capital funding, other sources and mechanisms for providing the operating subsidy may be considered, including possible county contributions.

Highway

Funding for the highway components of Alternatives 6A/B and 7A/B would come from two potential sources: the TTF and toll revenues collected from the I-270 ETLs through the Maryland Transportation Authority. At this time, there are no projections on funding values from these two sources. In addition, the Metropolitan Washington Council of Governments (MWCOG) 2007 CLRP and the CTP lists the I-270/US 15 Multi-Modal Corridor Study project for planning funds only with no funding allocated towards design, right-of-way acquisition and construction. If a selected build alternative is determined as the LPA, MDOT and SHA would determine the best financial method to fund the following project development phases.

Cost-Effectiveness

Transit Cost-Effectiveness

Cost-effectiveness is a measure of the long-term benefits of the proposed project compared to the capital and operating costs of the project. Assessments of cost-effectiveness can vary depending on how an alternative’s benefits are valued. In terms of easily-quantified criteria, such as riders per dollar or travel time savings per dollar, the BRT alternative is more cost-effective. LRT and BRT provide similar levels of benefit, and have similar levels of O&M cost requirements, in both cases with LRT slightly higher than BRT. However, the substantially lower BRT construction cost makes the

BRT mode option rank higher in terms of overall cost-effectiveness.

FTA Cost-Effectiveness Assessment

The FTA requires the use of a specific formula for calculating cost-effectiveness. This formula is used to provide a uniform basis for comparing projects in different metropolitan areas, thereby assisting FTA in making funding decisions for its New Starts program.

In its evaluation of the cost-effectiveness of a proposed project, FTA considers the incremental cost per hour of transportation system user benefits in the forecast year. Transportation system user benefits reflect the improvements in regional mobility caused by the implementation of the proposed project as measured by the changes in travel time to users of the regional transportation system. The cost-effectiveness measure is calculated by first estimating the incremental “base-year” annualized capital and operating costs of the project (over a lower cost “baseline” of transit service), and then dividing these costs by the projected user benefits.

The result of this calculation is a measure of project cost per hour of projected user (i.e., travel-time) benefits expected to be achieved if the project is added to the regional transit system. Proposed projects with a lower cost per hour of projected travel-time benefits are evaluated as more cost-effective than those with a higher cost per hour of projected travel-time benefits (*FY 2009 New Starts and Small Starts Evaluation and Rating Process*; July 2007).

**Table VI-9** presents the thresholds FTA will use in FY 2009 for assigning a *High*, *Medium-High*, *Medium*, *Medium-Low* or *Low* cost-effectiveness rating for each proposed project. FTA publishes updates to these breakpoints annually to reflect the impact of inflation.

FTA assigns a weight of 50 percent each to the cost-effectiveness and land use criteria in order to establish a summary project justification rating. Therefore, cost-effectiveness is a highly important measure in obtaining an acceptable rating along the path toward securing federal New Starts funding.

**Table VI-10** summarizes the cost-effectiveness calculations for the CCT alternatives. As shown, each of the build alternatives is compared to Alternative 6.2 TSM. With this comparison, the FTA is determining

Table VI-9: FTA FY 2009 Cost-Effectiveness Breakpoints

COST-EFFECTIVENESS RATING	BREAKPOINT
High	\$11.99 and under
Medium-High	\$12.00 - \$15.49
Medium	\$15.50-\$23.99
Medium-low	\$24.00-\$29.99
Low	\$30.00 and over

whether the costs of a fixed guideway system are worth the investment. The table shows that the two BRT alternatives would meet the FTA threshold, and would be acceptable to proceed into preliminary engineering, where more detailed study would be conducted on the alignments and costs.

Highway Cost-Effectiveness

The capital cost for Alternatives 6A/B and 7A/B are identical since the roadway paving is the same; therefore, the differences in cost-effectiveness between the two alternatives are founded in their operational performance. Alternatives 6A/B have one ETL from MD 121 to north of MD 80 while Alternatives 7A/B have two ETLs for the same segment. South of MD 121 both alternatives have two ETLs. The ETL toll rate has not been determined but the I-270 ETLs (not the I-270 general purpose lanes) are proposed as a 24-hour toll facility like the Intercounty Connector. The ETL toll rate is also planned to be dynamically set based on the level of I-270 general purpose lane traffic congestion. As the I-270 general purpose lane traffic congestion worsens, the I-270 ETL toll rate would increase. This scenario makes it difficult to determine which of Alternatives 6A/B or 7A/B would be the most cost effective to implement.

From the traffic operations/LOS viewpoint, Alternatives 7A/B would provide the most traffic congestion improvement. Out of a total 64 miles of I-270 peak direction highway segments, Alternatives 7A/B would provide 30 miles of peak direction LOS F improvement while Alternatives 6A/B would provide 13 miles of peak direction LOS F improvement.





Table VI-10: Cost-Effectiveness

	ALTERNATIVE 6.2 TRANSIT TSM	ALTERNATIVE 6A	ALTERNATIVE 6B	ALTERNATIVE 7A	ALTERNATIVE 7B
Capital Costs <sup>1</sup>	\$86,860,000	\$777,530,000	\$449,920,000	\$777,530,000	\$449,920,000
Equivalent Annual Capital Costs <sup>1,2</sup>	\$7,440,700	\$62,202,400	\$36,443,500	\$62,202,400	\$36,443,500
Equivalent Annual Capital Costs <sup>1</sup> above Alternative 6.2		\$54,761,700	\$29,002,800	\$54,761,700	\$29,002,800
Net Change in Operating Costs <sup>1</sup>	\$14,793,000	\$28,129,000	\$26,859,000	\$28,129,000	\$26,859,000
Operating Costs above Alternative 6.2 <sup>1</sup>		\$13,336,000	\$12,066,000	\$13,336,000	\$12,066,000
Daily User Benefit Hours	6,300	13,200	13,700	13,300	13,800
Benefit Hours above Alternative 6.2		6,900	7,400	7,000	7,500
Annual Benefit Hours		2,070,000	2,220,000	2,100,000	2,250,000
Annual New Transit Trips		2,679,600	2,864,400	2,710,400	2,895,200
Annual Cost per New Rider Above Alternative 6.2		\$26.54	\$14.34	\$26.24	\$14.18
Cost-Effectiveness		\$32.90	\$18.50	\$32.43	\$18.25

<sup>1</sup>All costs are given in \$million (2007 dollars)

<sup>2</sup>These are the one-time capital costs expressed as an annualized stream of payments over 20 years, much as the value of a mortgage can be expressed in terms of annual payments.

Costs represent a “snapshot” in time for comparison. Project costs are subject to change based on world and local financial markets.

Equity Considerations

Service Equity

Transit

The I-270/US 15 Multi-Modal Corridor transit improvements will support economic development and improved access throughout the corridor. The project will provide substantial travel benefits to residents of the project area and beyond, including minority, low-income and elderly populations. Low-income individuals, who can be the most transit-dependent, will especially benefit from greater accessibility to jobs, services and shopping opportunities. This improved accessibility will be evenly distributed to communities within and surrounding the project area. These benefits

will accrue not only from the proposed CCT transitway service, but also from the enhanced connectivity it will provide to existing bus services and to Metrorail, which provides transit service throughout Washington, DC and its suburbs.

The build alternatives will provide Washington, DC residents, a substantial portion of whom are low-income and transit-dependent, the opportunity to commute to jobs in the I-270/US 15 Corridor. Further, the build alternatives will provide more convenient transit services for project area residents to access the services, shopping and recreational opportunities within the project area as well as in Washington, DC.

Key employment centers in the corridor include Washington, DC, Bethesda, Rockville, Gaithersburg, Germantown, and Clarksburg. (Clarksburg, while much smaller in employment than the other areas listed, has long-range plans to accommodate over 10,000 dwelling units and enough commercial/industrial space for 20,000 employees). The build alternatives will reduce travel times to these areas and will benefit low-income and transit-dependent workers by widening the geographic area for employment opportunities that are accessible in relatively the same amount of travel time. The build alternatives will provide a higher benefit for the transit-dependent than Alternative 6-TSM because of the improved travel times. The build alternatives focus accessibility along the CCT alignment, where existing and proposed businesses are located, and considerably improve transit connections to those businesses.

In addition to job access benefits, the build alternatives will shorten travel times, increasing consumers’ accessibility to project area and region-wide services, shopping, and recreational activities. As a result, consumers will benefit from greater availability of attractive shopping opportunities and lower prices from competing businesses within the project corridor.

The BRT alternatives will also have an advantage over the LRT alternatives for the transit-dependent in that there is a greater chance for a one-seat ride. While individuals with access to a car might use kiss and ride or park and ride to access the CCT, transit-dependent riders are more likely to arrive at a CCT station by bus. BRT allows these local feeder buses to enter the system and continue along the transitway as express buses. In the LRT alternatives, all passengers arriving by bus would have to alight from the bus and transfer to a train.

Highway

As with the transit components, the accessibility and development benefits of the highway components will be evenly distributed throughout the corridor. Benefits such as growth in jobs, residential development, commercial development, and growth in land values will also be well-distributed. There should be no difference in the distribution of transportation benefits between Alternative 6A/B and Alternative 7A/B.

Due to the cost of tolls, the benefit of the ETLs will likely not be as great for the low-income drivers. Drivers who are less able to pay for tolls will still benefit from the build alternatives, however, because of the improved LOS predicted on the general-purpose lanes.

Financial Equity

Financial equity relates to the sources of capital and operating funds for the project and is a function of how the sources of those funds correlate to the beneficiaries of the project and to various income groups. There is no difference between the build alternatives with respect to financial equity.

The construction of the ETL lanes will be partially financed through ETL tolls; however, to a large extent the construction of the build alternatives will be financed by sources other than users, predominantly by state and federal funds. Transit users will pay transit fares to use the transit services, but those funds are typically used to cover part of the operating costs. Some local funding from Montgomery County and Frederick County are likely to be provided; the source and allocation of county funds are unknown at this time. State funds will come from the State TTF. The trust fund consists of general taxes, fees, charges and operating revenues of MDOT paid by residents statewide. This is the funding source for most statewide transportation projects. Because of this broad-based mix of tax sources, no one group will be bearing a disproportionate financial burden as a result of the financial plan for the proposed I-270/US 15 Multi-Modal Corridor improvements.

It is anticipated the selected alternative will compete with other transportation improvement projects in the Washington, DC region and throughout Maryland for existing federal and state funding allocations. If existing revenue sources are not sufficient, additional revenue sources may need to be provided by local, state, or even private sources as discussed in **Chapter V**. These may include locally-enacted or increased gasoline, sales or property taxes, although these sources have not been widely supported in the past. The taxes are often enacted within the area expected to benefit from the transportation improvements through congestion relief or improved access to public transit, which serves to offset the regressive nature of the levy(ies).



Environmental Justice

**Chapter IV** of this document describes impacts to low-income and minority communities in the study area. With the exception of displacements, few impacts were found to have a disproportionate impact on areas with low-income and/or minority populations. Project benefits were likewise well-distributed, with highway benefits accruing to all residents, and three transit stations (East Gaither, West Gaither, and Metropolitan Grove) located within EJ areas (block groups that met the EJ threshold).

Residential displacements were found to be disproportionately high in communities within census block groups that met the 50 percent threshold for minority populations, such as the Foxcroft II apartments in Frederick, and the Brighton West and London Derry communities in Montgomery County along I-270 south of MD 117. This impact is the same under each of the build alternatives.

O&M Facilities Sites

None of the transit O&M sites would have environmental justice impacts. None are located in census block groups that meet the 15.4 percent poverty threshold for Montgomery County, and only one site (Crabbs Branch Way) is in a block group that meets the county’s 50 percent minority threshold.

The Crabbs Branch Way site (Shady Grove Site 6) is located in a census block group with 54 percent minority residents. The site is adjacent to a residential area that could potentially be an EJ neighborhood. There are no displacements associated with this undeveloped site; therefore, the selection of this site would not physically impact any minority communities.

Development Impacts

Beyond the direct impacts of displacements discussed above, EJ areas in the corridor may also be affected by the indirect impacts of the enhanced economic development encouraged by the alternatives. While the build alternatives will improve access to employment, shopping, educational, recreational, and other opportunities for all residents, including minority and low income residents, these benefits can result in increased land values and gentrification. Increased land values are a benefit for current land owners who are willing to relocate, or who

are able to take advantage of their wealth. However, it can be a burden for renters and for low-income homeowners who will have to pay higher property taxes. This effect will also impact neighborhood businesses or institutions that may be forced to close or relocate when commercial property values increase. Loss of community businesses and residents can harm community cohesiveness.

Alternative 7A/B should enhance land values, particularly in Frederick County where travel times to employment centers in southern Montgomery County will be reduced more so than under Alternative 6A/B. The transit improvements will primarily benefit Montgomery County, particularly in the vicinity of transit stations. Because the LRT component is believed to have slightly higher development benefits than BRT, the LRT alternatives should have a somewhat larger impact on station areas, including those located in minority and low-income neighborhoods.

Alternative 7A/B may, therefore, have a slightly larger impact on EJ areas in both counties. This includes positive benefits, such as enhanced access to jobs and other destinations, and higher job creation resulting from the higher construction costs of Alternative 7A. Negative impacts, such as the somewhat higher gentrification pressures that may be put on historically low-income or minority communities, would also accrue with Alternative 7A/B.

Key Differentiators

Ease of transportation, particularly reducing the amount of time spent commuting, is a major factor in a community’s quality of life. Major improvements of all types often have environmental impacts, and it is the job of the public, political leaders and other stakeholders to decide if the benefits of a project justify both the financial costs and the project impacts to the natural and social environment.

Because the footprint of Alternatives 6A/B and 7A/B is the same, environmental impacts are identical for some resources (wetlands, floodplains, forests), and of a similar degree for others (noise, air quality). This leaves effectiveness and cost as the key differentiators. Alternative costs, as well as other criteria where there are notable differences between the build alternatives, are shown in **Table VI-11**. Where differences are not

Table VI-11: Evaluation Matrix<sup>1</sup>

CRITERION	ALTERNATIVE 6A LRT 1 ETL <sup>2</sup>	ALTERNATIVE 6B BRT 1 ETL <sup>2</sup>	ALTERNATIVE 7A LRT 2 ETLs <sup>2</sup>	ALTERNATIVE 7B BRT 2 ETLs <sup>2</sup>
Ridership (Daily Guideway Boardings)	30,000	26,000	30,000	27,000
Annual Rider Benefit Hours	2,070,000	2,220,000	2,100,000	2,250,000
Annual New Transit Trips	2,679,600	2,864,400	2,710,400	2,895,200
Cost per Rider Benefit Hour	\$32.90	\$18.50	\$32.43	\$18.25
2030 LOS on ETLs	LOS C/D	LOS C/D	LOS C/D	LOS C/D
2030 LOS F conditions on general-purpose lanes (64 total direction miles)	30.2	30.2	13.4	13.4
Daily VMT (regional)	40,950,909	40,950,909	41,020,351	41,020,351
Daily Average Speed (regional)	22.2	22.0	22.4	22.4
Operating Cost				
Transit (\$2007)	\$28.1M	\$26.9M	\$28.1M	\$26.9M
Highway	n/a	n/a	n/a	n/a
Capital Cost				
Transit (\$2007)	\$777.5M	\$449.9M	\$777.5M	\$449.9M
Highway	\$3,879M	\$3,879M	\$3,879M	\$3,879M
Total	\$4,656.5M	\$4,328.7M	\$4,656.5M	\$4,328.7M
Visual Impacts	2nd	1st	2nd	1st
Air Quality	1st	1st	2nd	2nd
CO <sup>3</sup>	0.50%	0.50%	0.50%	0.50%
NO <sub>x</sub> <sup>3</sup>	0.40%	0.40%	0.30%	0.30%
PM <sub>10</sub> <sup>3</sup>	1.00%	1.00%	1.10%	1.10%
PM <sub>2.5</sub> <sup>3</sup>	1.00%	1.00%	1.10%	1.10%
VOC <sup>3</sup>	-0.30%	-0.30%	0.10%	0.10%
Economic Development Potential	2nd	4th	1st	3rd
Potential for Increased Housing Costs	3rd	1st	4th	2nd
Energy				
Construction Energy	1st	2nd	1st	2nd
Transportation Energy				
Construction-phase Impacts on Neighborhoods	2nd	1st	2nd	1st

<sup>1</sup>Criteria that are not easily quantifiable are ranked. Those ranked 1st have the best performance (highest effectiveness or lowest impact). Does not include O&M facility, if one is chosen.  
<sup>2</sup>Refers to the number of ETLs between MD 121 and north of MD 80.  
<sup>3</sup>These percentages represent the change in regional transportation emissions compared to the No-Build.  
M = million



quantifiable, a ranking is used to show which alternative or alternatives ranks best (highest effectiveness or lowest impact).

### Consistency with Local Planning Documents and Public Input

#### Relevant to Purpose and Need Goal 1 – Support Orderly Economic Growth

There is no difference among the alternatives with respect to planning documents. Local planning documents have called for a rapid transit system to be built along the CCT corridor for decades, and each of the build alternatives provides that. Current plans also assume that the I-270/US 15 Corridor will be widened and account for the development that is likely to result from these improvements.

While the local planning documents recommended additional general-purpose or HOV lanes for highway improvements, the new ETLs proposed with Alternatives 6A/B and 7A/B will likely have similar effects on development and may encourage higher transit usage. ETLs are a newer type of managed lanes that have not been incorporated into many master plan updates.

### Transportation Effectiveness

#### Relevant to Purpose and Need Goal 2 – Enhance Mobility, and to Purpose and Need Goal 3 – Improve Goods Movement

With an additional ETL lane north of MD 121, Alternative 7A/B will provide a better level of service on both the ETL and general purpose lanes compared to Alternative 6A/B. LRT attracts ten to 15 percent more riders, has slightly faster travel times, and provides seven percent more travel time savings benefits than BRT. Alternative 7A should therefore be considered as having the highest performance in terms of transportation benefits.

### Environmental Impacts

#### Relevant to Purpose and Need Goal 4 – Preserve the Environment

Each build alternative has an identical physical footprint. The selection of an O&M facility location will vary, as some are LRT or BRT-only locations. Most environmental resource impacts are identical, except in the areas of air quality, energy usage, visual and construction-phase impacts on neighborhoods. These differences are very slight among alternatives. Measureable differences are anticipated for the following:

- **Visual** impacts differ in that the entire LRT alignment will have poles, catenary wires, and other features that are not included in the BRT alternatives. Alternatives 6B and 7B therefore rank highest in this area – having less visual impact.
- **Economic Development Potential** is higher for the LRT alternatives compared to the BRT alternatives, and for Alternative 7A/B compared to Alternative 6A/B. Alternative 7A therefore ranks highest in this area. Economic impact differences among the build alternatives may have secondary effects as well, as described in the equity section.
- **Equity** – The BRT alternatives may provide a better level of service to the transit-dependent, as transit trips made under BRT are more likely to be one-seat rides, while LRT trips are more likely to require transfers. Economic development impacts, mentioned above, may also have secondary effects resulting in gentrification pressures on traditionally low-income or minority communities. The stronger the economic development impact, the stronger the development pressures, meaning that Alternative 6B would be likely to have the least harmful impact.

With each alternative ranking best in at least one of the above criteria, the relative performance of the build alternatives in terms of environmental impacts is not quantifiable, and must be decided by stakeholders.

### Costs/Cost-Effectiveness/Financial Feasibility

#### Relevant to Purpose and Need Goal 5 – Optimize Public Investment

Alternatives 6B and 7B are the least costly of the build alternatives. These alternatives would therefore be easiest to find funding for, although all alternatives are financially feasible given current state and federal funding resources, private funding opportunities resulting from the projected economic development, and the availability of toll revenues from the ETLs.

Selecting the most cost-effective alternative is not as clear. Looking only at the FTA cost-effectiveness measure, which calculates the cost of transit riders' travel time savings benefits above Alternative 6.2 TSM, it is clear that Alternatives 6B and 7B (BRT transit mode) rate substantially higher than Alternatives 6A and 7A (LRT transit mode) due to the latter's substantially higher capital cost. Alternative 7B rates slightly higher than Alternative 6B due to the additional benefit hours that Alternative 7B provides to transit users.

However, there are other issues that will be considered important by the residents, business owners, and workers of the area, as well as by the funding agencies, planning departments, and other stakeholders. These issues include the effectiveness of the alternatives to provide development opportunities, job opportunities, and a balanced and equitable transportation system. The selection of a preferred alternative must be made with these considerations in mind, as well as each alternative's cost and environmental impacts.







# Comments and Coordination

This chapter documents project coordination with agencies, elected officials and members of the public that has occurred since the public hearings on the Draft Environmental Impact Statement (DEIS) in June, 2002. A list of relevant correspondence is included in **Appendix D**.

## Summary of Public Hearings and Express Toll Lanes<sup>SM</sup> Workshops

### 2002 Public Hearings on the Draft Environmental Impact Statement

Public Hearings were held on June 25, 2002 in Montgomery County at Seneca Valley High School and on June 27, 2002 in Frederick County at Urbana High School. Attendees had the option of providing public oral testimony, private oral testimony, and/or written comments. Private oral testimony was received from 13 citizens and written comments were received from approximately 125 citizens, government agencies, and non-profit organizations. The written submissions included 3 petitions, totaling approximately 300 signatures, to avoid and/or minimize impacts to Monocacy National Battlefield. **Table VII-1** lists the written comments collected and the primary concerns cited. Every written comment received an individualized response from the Maryland State Highway Administration/Maryland Transit Administration (SHA/MTA) and the date of this response is noted in the table.

Overall, respondents speaking at the hearings opposed the I-270/US 15 road widening and generally favored new and/or improved transit, with a preference for light rail. Almost all respondents agreed that some form of improvement is needed. Residential, air quality and noise impacts were general concerns of many residents. Written comments were generally similar to spoken comments except that some written comments indicated support for Alternative 5C. Specific concerns and suggestions from the written and oral comments are summarized later in this chapter.

Government agencies and non-profit organizations expressed concerns about socio-economic and natural environmental impacts. Most commented on proposed transit facilities as well as highway widening alternatives. Among these groups, there was more support for Alternatives 3A or 3B than the other alternatives.

### Citizen Comments

#### General Comments [46]

- Opposed Alternative 5 all options (8)
- Supported Alternative 4 either option (7)
- Supported Alternative 5, option A (2), option B (1), option C (6)
- Supported Alternative 3B (5)
- Supported Alternative 3A (4)
- Supported Alternative 1 – No Build (2)
- Supported Alternative 2 (2)
- Supported Alternative 2 with new or improved interchanges (1)
- Opposed Alternative 3A/B (1)
- Opposed Alternative 4A/B (1)
- No loss of open space (1)
- Placement of new and improved sound barriers (1)
- Reduce number of vehicles in the area by limiting population growth (1)
- Build CCT before the highway to promote transit ridership (1)
- Pine trees along the alignment should be cut down and no new pine trees replaced to reduce air pollution (1)
- Need rest area on southbound I-270 close to MD 118 (1)

### Highway-Related Comments

#### General Highway Comments [98, 3 petitions]

- Opposed highway widening (33)
- Supported highway widening (17)
- Opposed to potential impacts to Monocacy Battlefield (3 petitions, 1 organization, and 6 individuals)
- Support of highway capacity improvements north of Clarksburg (8)
- Staleybridge Road (Fox Chapel) residents expressed opposition to residential impacts and support for highway capacity improvements north of Germantown (7)

Table VII-1: Summary of Written Comments Received at the Public Hearings

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Marilyn Prather	Germantown, MD	Concerned about possible impacts to properties along Staleybridge Road	7/17/2002
D.M. Girton	Rockville, MD	Explained reasons for supporting Alternative 4A and Alternative 4B	7/18/2002
Patricia J. Goetz	Frederick, MD	Explained reasons for supporting Alternative 5	7/18/2002
Leonard J. May	Frederick, MD	Expressed support for Alternative 5	7/18/2002
Richard Parsons	Frederick, MD	Expressed support for Alternative 5	7/18/2002
Ron Rogers	Frederick, MD	Expressed support for Alternative 5	7/18/2002
Richard Arkin	Rockville, MD	Does not support any proposed highway capacity improvements presented at the hearings; asked when a decision will be made	7/19/2002
Mr. and Mrs. Ted Benz	Germantown, MD	Does not support any alternatives presented at the hearings; asked when a decision will be made	7/19/2002
Charles Flanders Jr.	Montgomery Village, MD	General comment card; asked when a decision will be made	7/19/2002
Thomas Gilliland	Gaithersburg, MD	Concerned about engineering plans, impacts and traffic; interested in the DEIS	7/19/2002
John Hanlon	Gaithersburg, MD	Does not support any proposed highway capacity improvements presented at the hearings	7/19/2002
JoAnn E. Keller	Germantown, MD	Concerned about possible impacts to properties along Staley Road	7/19/2002
Mr. and Mrs. Michael Larson	Frederick, MD	Concerns regarding noise levels in community	7/19/2002
Mr. and Mrs. Martin Silber	Frederick, MD	General concerns about the Study	7/19/2002
Bruce C. Strnad	Thurmont, MD	Supports improvements in the city of Frederick area; asked when a decision will be made	7/24/2002
Richard P. Trapane	Frederick, MD	Support for Alternative 2 and Alternative 3B; asked when a decision will be made	7/24/2002
Ricky E. Nanyle	Frederick, MD	Explained reasons for supporting the proposed highway capacity improvements presented at the hearings; asked when a decision will be made	7/31/2002
Darlo Weddle	Frederick, MD	Supports Alternative 1 (No-Build)	8/1/2002



Table VII-1 (cont.): Summary of Written Comments Received at the Public Hearings

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Darryl Klopfer	Monrovia, MD	Explained reasons to support Alternative 5C and Alternative 3B	8/7/2002
Ken Reid	Rockville, MD	Concerned about the impacts to social, economic, natural and cultural resources and communities	8/7/2002
Annette M. Chrisman	Germantown, MD	Concerned about the impact to social, economic, natural and cultural resources, including the communities adjacent to I-270 and to the Monocacy National Battlefield	8/8/2002
Lloyd R. DeVos	New York, NY	General comments regarding the Study; information on travel forecasts, various level-of-services were supplied by SHA	8/8/2002
Carl H. Gaum	Kensington, MD	Does not support any proposed highway capacity improvements presented at the hearings; concerned about impacts to the environment and surrounding communities; asked when a decision will be made	8/8/2002
Kurt Manwiller	Frederick, MD	Concerned about the impact of right-of-way procedures; transportation and safety improvements; asked when a decision will be made	8/12/2002
The Mozie Family	Germantown, MD	Requested a general overview of the project	8/13/2002
Jimmy Pennywell, (President, Brighton West Condominiums IV)	Silver Spring, MD	Concern regarding impacts on the Brighton West Condominium IV owners; does not support any proposed highway capacity improvements presented at the hearings; asked when a decision will be made	8/14/2002
Kenneth Starr	Frederick, MD	Does not support any proposed highway capacity improvements along the I-270/US 15 Corridor; asked when a decision will be made	8/14/2002
Paul Timmerman	Issaquah, WA	Concerns regarding the impacts to the Monocacy National Battlefield and to social, economic, natural and cultural resources including the communities adjacent to I-270	8/14/2002
Clarita Anderson	Olney, MD	Signed a petition; concerns regarding the impacts to the Monocacy National Battlefield; asked when a decision will be made	8/15/2002
David G. Anderson	Olney, MD	Signed a petition; concerns regarding the impacts to the Monocacy National Battlefield; asked when a decision will be made	8/15/2002
C. Bowling	Richmond, VA	Signed a petition; concerns regarding the impacts to the Monocacy National Battlefield; asked when a decision will be made	8/15/2002
William E. Brown	Frederick, MD	Signed a petition; concerns regarding the impacts to the Monocacy National Battlefield; asked when a decision will be made	8/15/2002
Wayne A. Coblenz	Middletown, MD	Signed a petition; concerns regarding the impacts to the Monocacy National Battlefield; asked when a decision will be made	8/15/2002

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
J.L. Grisson	Roanoke, VA	Signed a petition; concerns regarding the impacts to the Monocacy National Battlefield; asked when a decision will be made	8/15/2002
John Halvonik	Rockville, MD	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
James Harris	Smyrna, GA	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Stephen L. Harris	Rockville, MD	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Kent M. Husted	North Bethesda, MD	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Bonnie L. Maidak	Germantown, MD	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Chris McClaud	Cloverdale, MD	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Shawn J. Millikan	Hanover, VA	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Amelia Parbeault	Cloverdale, VA	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Judy Pulley	Courtland, VA	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
John A. Salerno	Rockville, MD	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
D.C. Thompson	Blond, VA	Signed a petition; concerns regarding impacts to the Monocacy National Battlefield, parklands, historic resources and surrounding communities; asked when a decision will be made	8/15/2002
Elliott Perrett	Frederick, MD	Concerned about the impacts to the Monocacy National Battlefield; concerns regarding Section 106 and 4(f) resources; asked when a decision will be made	8/16/2002



Table VII-1 (cont.): Summary of Written Comments Received at the Public Hearings

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Larry W. Fogle, (President, Mercer Place Homeowner Association)	Frederick, MD	Concerned about the impacts to their property and noise levels in community; concerns and interest of the Mercer Place Homeowner's Association; asked when a decision will be made	8/19/2002
Juanita Plalero	Gaithersburg, MD	Concerned about transportation and safety improvements; explained reasons to support Alternative 2; and concerned about impacts to social, economic, natural and cultural resources , including open space	8/23/2002
Andrew Taylor	Emmitsburg, MD	Concerned about impacts to the environment and surrounding communities; asked when a decision will be made	8/23/2002
Esther P. Gelman	Potomac, MD	Provided correspondence, testimony and concern about Kensington Realty, Inc	8/26/2002
Mr. & Mrs. Michael Higgins	Frederick, MD	Concerned about the impact to community property; suggest updating photography maps used of Frederick; asked when a decision will be made	8/26/2002
James V. Rizzo	Frederick, MD	Inquired about the completion of construction and proposed improvements; impacts to environment and surrounding communities	8/26/2002
Deborah Yee	Frederick, MD	Concerned about the impact to their property and the impacts to social, economic, natural and cultural resources; asked when a decision will be made	8/26/2002
Susan Cardenas (President, Brighton West Condominiums III)	Silver Spring, MD	Concerned about impacts to the environment and surrounding communities; asked when a decision will be made	8/27/2002
William Brinkley	Grasonville, MD	Agrees the DANAC Corridor Cities Transitway (CCT) transit stop should be part of the I-270/US 15 Multi-Modal Corridor Study; asked when will alternative be identified; funding concerns; impacts to property	8/28/2002
Susana Cardenas	Gaithersburg, MD	Opposes any residential impacts to the Fox Chapel community and supports highway capacity improvements only north of Germantown; noise/environmental impacts	8/28/2002
Timothy Dugan	Rockville, MD	Recommends constructing northbound and southbound I-270/US 15 HOV lanes north of the City of Frederick and the reasons he opposes additional general-purpose lanes on I-270/US 15; transportation and safety improvements; asked when a decision will be made	8/28/2002
Leota F. Hall	Gaithersburg, MD	Does not support any proposed highway capacity improvements presented at the hearings; concerns about impacts to social, economic, natural and cultural resources, including the communities adjacent to I-270 and US 15; asked when a decision will be made	8/28/2002
Mr. & Mrs. Kenneth Inn	Germantown, MD	Submitted petition regarding the I-270/US 15 Multi-Modal Corridor Study, concerned about impacts to the Monocacy National Battlefield	8/28/2002

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Delia R. Miller	Germantown, MD	Explained reasons to support Alternative 5C in combination with a retaining wall along northbound I-270 near Middlebrook Road and elimination of the proposed I-270/I-370 HOV direct access ramps; asked when a decision will be made	8/28/2002
(Officers and Board of Directors, Brighton West V Homeowner's Association)	Silver Spring, MD	Opposed any residential impacts to the Fox Chapel community and supported highway capacity improvements only north of Germantown; asked when a decision will be made	8/28/2002
Mr. & Mrs. Robert Prien	Germantown, MD	Opposed any residential impacts to the Fox Chapel community and supported highway capacity improvements only north of Germantown; asked when a decision will be made	8/28/2002
John A. Scott	Germantown, MD	Opposed any residential impacts to the Fox Chapel community and supported highway capacity improvements only north of Germantown; asked when a decision will be made	8/28/2002
Randy Willard	Frederick, MD	Does not support any proposed highway capacity improvements presented at the hearings; opposes any residential impacts to the community; asked when a decision will be made	8/28/2002
Mr. & Mrs. Roger Starcher	Gaithersburg, MD	Concerned about impacts to the environment and surrounding communities, does not support any proposed highway capacity improvements presented at the hearings	8/29/2002
Sandra Painter	Frederick, MD	Explained reasons not to support any proposed highway capacity improvements presented at the hearings; concerned about impact to surrounding communities; asked when a decision will be made	9/9/2002
Fred Beddall	Frederick, MD	Concerned about impacts to the environment and surrounding communities and air quality	9/10/2002
Kyle Ackerman	Laytonsville, MD	Explained reasons to support the proposed combined highway and transit improvements presented at the hearings; asked when a decision will be made	9/11/2002
Ben Swet	Frederick, MD	Concerned about transportation improvements transfer and walking time between platforms; explained reasons to support Light Rail Transit as the project's transitway mode; funding questions; asked when a decision will be made	9/11/2002
Krisna Becker	Clarksburg, MD	Does not support any proposed highway capacity improvements presented at the Hearings, concerned about parking facilities, suggested shuttle programs (TSM/ TDM), asked when decisions will be made	9/12/2002
Miriam Daniel	Rockville, MD	Concerned about the impact on Mr. Popore's property, asked when a decision will be made	9/12/2002
Thomas Fuchs	Rockville, MD	Concerned about transportation improvements, parking, funds, types of service; asked when a decision will be made	9/12/2002



Table VII-1 (cont.): Summary of Written Comments Received at the Public Hearings

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Carl Henn	Rockville, MD	Concerned about transportation improvements, widening of I-270/US 15 and funding	9/12/2002
Lawrence Hierstetter (Manekin, LLC)	Frederick, MD	Concerned about impacts to social, economic, natural and cultural resources, including businesses adjacent to I-270 and US 15	9/12/2002
Barbara Knapp	Germantown, MD	Does not support any proposed highway capacity improvements presented at the hearings; concerned about a rest area on southbound I-270, transit safety, and types of service (LRT, BRT or Premium Bus)	9/12/2002
L. Osborne	Frederick, MD	Concerned about transportation improvements, widening of I-270/US 15, how far it will expand, and when the alternative decision will be made	9/12/2002
Lynne Rosenbusch	Clarksburg, MD	Concerned about transportation improvements, widening of I-270/US 15, future expansion, pedestrian safety, and when the alternative decision will be made	9/12/2002
James Lighthizer (President, Civil War Preservation Trust)	Washington, DC	Concerns about impacts to social, economic, natural and cultural resources, including the communities adjacent to I-270, and the Monocacy National Battlefield	9/16/2002
Michael S . Rempe	Ijamsville, MD	Concerned about impacts to property. Does not support the proposed location of MD 75 interchange	9/20/2002
David & Kristen Crotty	Ijamsville, MD	Does not support the proposed MD 75 interchange alignment (location)	9/23/2002
Gary Goubeau	Potomac, MD	Supports bus rapid transit system along the CCT alignment	9/23/2002
Ira Palmer	Frederick, MD	Concerns about transportation improvements and parking; Recommends widening I-270 to three lanes in each direction throughout the project area	9/23/2002
Joan Postow	Gaithersburg, MD	Concerns regarding which type of service is preferred – LRT, BRT or Premium Bus – and the potential problems associated with an at-grade crossing of the transitway through the intersection of Muddy Branch Road and Great Seneca Highway	9/23/2002
Gail M. Stephens	Severna Park, MD	Shared thoughts concerning impacts to adjacent properties and the Monocacy National Battlefield; parking issues cited and suggested the CCT extend to Frederick	9/23/2002
John Hamilton	Mount Airy, MD	Enquired about transit modes; explained reasons to recommend a Metrorail extension to Frederick	9/24/2002
Harvey T. Kaplan	Rockville, MD	Comment regarding transportation improvements, supports light rail transit	9/24/2002
Anthony M. Natelli (Natelli Communities)	Gaithersburg, MD	Shared thoughts concerning the transit options and impacts to historic sites; inquired about the Urbana Region Plan	9/24/2002
Dr. Goetz K. Oertel	Potomac, MD	Explained reasons not to support any of the proposed highway capacity improvements until construction of transit improvements along the corridor have been completed; asked when a decision will be made	9/24/2002

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Kirk M. Patton, Sr.	Clarksburg, MD	Interested in transportation improvements, parking facilities; supports Alternative 5A	9/24/2002
Cindy Snow	Damascus, MD	Concerned about transportation improvements, supports light rail transit. Does not support any of the proposed highway capacity improvements until construction of transit improvements along the corridor have been completed	9/24/2002
Ellen Turner	Rockville, MD	Explained reasons to recommend construction of transit improvements before highway improvements, supports light rail transit; widening of I-270/US 15 and transit service; which type of service is preferred	9/24/2002
Richard N. Wright (Montgomery Village Association)	Montgomery Village, MD	Concerned about transportation improvements, walking time between platforms; explained reasons to recommend construction of transit improvements before highway improvements; asked who developed the alternative and why; asked when a decision will be made	9/24/2002
Larry & Rebecca Yates	Germantown, MD	Concerned about impacts to the environment and surrounding communities	9/24/2002
Don Bates, Jr.	Lees Summit, MO	Signed a petition, concerned about impacts to the Monocacy National Battlefield; concerned about transportation improvements	9/25/2002
William J. Brinkley	Grasonville, MD	Signed a petition, concerned about impacts to the Monocacy National Battlefield; concerned about transportation improvements	9/25/2002
Alan Chilton	Lamar, MO	Signed a petition, concerned about impacts to the Monocacy National Battlefield; concerned about transportation improvements	9/25/2002
John H. Fauerby	Clarksburg, MD	Concerned about transportation improvements, station locations, bus service and transit alternatives; funding; concerned about impacts to property and environment	9/25/2002
Arnold W. Schofield	Fort Scott, KS	Signed a petition, concerned about impacts to the Monocacy National Battlefield; concerned about transporation improvements	9/25/2002
John A. Spencer	Fort Scott, KS	Signed a petition, concerned about impacts to the Monocacy National Battlefield; concerned about transporation improvements	9/25/2002
Matthew Schroebel	Keedysville, MD	Concerned about transportation improvements; transitway to local office complexes; weigh-in-motion (WIM); supports Alternative 5	9/26/2002
Michael J. McNerney (Thomas Somerville Co.)	Upper Marlboro, MD	Interested in the proposed Shady Grove transitway yard/shop facility	9/27/2002
Edward K. Cassidy	Monkton, MD	Shared thoughts concerning impacts to property and to the Monocacy National Battlefield; interested in transportation improvements	10/1/2002
Lewis R. Gaty, II	Lexington, VA	Concerns about impacts to the Monocacy National Battlefield	10/3/2002
Felix M. Killar Jr.	Monrovia, MD	Interested in transportation improvements, impacts to property and HOV lanes	10/4/2002





Table VII-1 (cont.): Summary of Written Comments Received at the Public Hearings

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
William J. Bradley	Germantown, MD	Interested in transportation improvements	10/7/2002
Dennis P. Graham	Beltsville, MD	Concerned about transportation improvement, impacts to the Monocacy National Battlefield	10/21/2002
Garry Viele		Inquired about proposed transportation improvements	10/22/2002
Laura Hansen	Winter Haven, FL	Concerned about the impacts to the Monocacy National Battlefield and transportation improvements	10/23/2002
Gail M. Stephens	Severna Park, MD	Submitted a petition of citizens concerned about possible impacts to Monocacy National Battlefield	11/7/2002
Clara Craft	Ijamsville, MD	Concerned about the possible impacts to their property adjacent to southbound I-270, between MD 109 interchange and proposed MD 75 interchange	11/27/2002
William J. Brinkley	Grasonville, MD	Submitted a petition and concerns about possible impacts to the Monocacy National Battlefield	11/29/2002
Mr. and Mrs. Frank Adams	Chicago, IL	Submitted a petition concerning transportation and safety improvements, impacts to social, economic, natural and cultural resources, including communities, impacts to the Monocacy National Battlefield, and parkland and historic resources	12/4/2002
Terry Carr	Schaumburg, IL	Submitted a petition concerning transportation improvements, impacts to social, economic, natural and cultural resources, including communities, impacts to the Monocacy National Battlefield, and parkland and historic resources	12/6/2002
Kent Adcock	Frederick, MD	Inquired about proposed improvements to US 15 in Frederick County and transportation improvements	1/30/2003
Bill Gough	Baltimore, MD	Inquired about proposed improvements to I-270 in Frederick County, transportation improvements, impacts on social, economic, natural and cultural resources, including communities	2/6/2003
Henry S. Hamm	Clarksburg, MD	Concerned about transportation improvements, land use and zoning issues; impacts on the gas line and community property	2/28/2003
Stephen Coulter	Frederick, MD	Concerned about the I-270 Weigh Station, issues related to the I-270/US 15 Multi-Modal Corridor Study, and accident history	3/31/2003
Janet Linhart	Wheaton, IL	Concerned about the Monocacy National Battlefield	8/13/2003
Mr. & Mrs. Larry R. Yates	Germantown, MD	Concerned about impacts to Fox Chapel Community and surrounding communities; asked when the project will begin; funding sources	9/4/2003
Carlos Betancourt	Germantown, MD	Concerned about impacts to Fox Chapel Community; evaluation of both transit and highway transportation strategies to improve safety conditions and relieve the current and projected congestion	9/8/2003

NAME (TITLE & AFFILIATION)	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Christopher Turnbull (Wells & Associates, LLC)	McLean, VA	Shared concepts for the interchanges; impacts to the social, economic, natural and cultural resources, including the communities; asked when a decision will be made	9/10/2003
John Huongnguyen	Germantown, MD	Concerned about the impacts to Fox Chapel Community	10/7/2003
Margaret Tricoli	New Market, MD	Inquired about the purpose of the Study	5/17/2004

- Reduce residential impacts along Mercer Place in Frederick – Fairfield Community (5)
- Traffic impact of this study on future traffic south and north of study area, and secondary roads, such as MD 355 (3)
- Support HOV lanes (southbound and northbound) north of the city of Frederick (2)
- Reduce residential impacts along northbound US 15 (2)
- Include sound barriers along northbound US 15 – Fairfield Community (2)
- The additional interchanges will lead to additional LOS ‘F’ (2)
- Reconsider HOT lanes (2)
- Limited access/express lanes from Frederick to I-270/I-495 split (1)
- Lengthen acceleration lanes at the weigh stations (1)
- Increase HOV lanes (1)
- Reduce business impacts along northbound I-270 (1)
- Convert HOV lanes to HOT lanes from Urbana to Frederick to avoid widening I-270 through Monocacy Battlefield (1)
- Build circumferential highway around Frederick (1)
- Mitigate light pollution at improved highway segments (1)
- The partial take of the Fireside Condominiums complex as shown in the DEIS is not possible; a full take would be required because the remaining buildings share utilities that are dependent on infrastructure in the buildings to be removed (1)

- Any benefits of widening will largely go to Frederick County residents at the expense of Montgomery County residents (1)

*I-270/I-370 Comments [13]*

- Brighton West Homeowner’s Association expressed concerns about right-of-way impacts and proposed displacement in that community. (3 home owners associations and 10 individuals)

*I-270/MD 75 Extended Comments [3]*

- Inquired about any other interchange alternatives, and community and commuters’ benefits of having a new interchange (1)
- Inquired about future location and traffic patterns on MD 75 (1)
- Inquired about Lewisdale Rd between MD 355 and MD 75 (1)

*I-270/I-70 Comments [1]*

- I-70 East ramp to MD 355 needs to be lengthened to accommodate morning rush hour traffic (1)

*Transit-Related Comments*

*General Transitway Comments [57]*

- TSM/TDM transit connectivity (15)
- Increase mass transit (12)
- Extend transitway to Frederick (7)
- Extend Metrorail north of Shady Grove (5)
- No I-270 roadway widening until CCT is completed (5)
- CCT alignment should be modified to provide service to Kentlands and Lakelands (2)



- Extend CCT to Clarksburg (2)
- Connect project alternatives with the Shady Grove Metro Station (2)
- Connect transitway with the Shady Grove Adventist Hospital (1)
- Possible impacts to DANAC Corporation Stiles property (1)
- Extend transitway north to Urbana to avoid I-270 congestion from commuters who would enter the highway at COMSAT (1)
- Resident at Game Preserve Road (displacement) opposes the proposed transitway alignment (1)
- Transitway alignment misses much of the business community in Montgomery County (1)
- Light rail on the current alignment near Dorsey Farm would be unsafe for children living in the area: relocate the rail line or use BRT instead (1)
- Provide more bus service for local neighborhoods to transitway stops (1)

*Transitway – LRT Specific Comments [53]*

- Supported LRT (37)
- Opposed (5)
- LRT is not fast enough (4)
- Extend LRT to Frederick (3)
- If LRT is selected, a raised crossing would be necessary at the Great Seneca & Muddy Branch intersection (1)
- Consider LRT to Frederick and Bethesda (1)
- Use I-270 median for LRT (1)
- Add more Ride-On buses to feed into LRT (1)

*Transitway – BRT Specific Comments [26]*

- Supported BRT (15)
- Opposed BRT (11)
- Buses do not attract riders as much as rail lines

*Bus Service [1]*

- Premium bus does not minimize congestion (1)

*MARC Service [1]*

- Daily MARC Service to Frederick and Martinsburg (1)

*Yard and Shop [2]*

- No Yard/Shop facility at COMSAT on LCOR, Intelsat and Lockheed Martin properties (2)

*Land Use/Development Issues [5]*

- Adding more highway capacity to I-270 roadway does not promote Smart Growth (1)
- Wanted to know how existing or proposed land use in Frederick and Montgomery counties will generate traffic and how slower/less growth would reduce traffic demand (1)
- Wanted to see proposal to use the money proposed for construction to buy development rights in the region to reduce demand (1)
- Stop permitting new housing if roads are not built to accommodate the new growth (1)
- Any improvement in traffic flow will only help developers (1)

**Government Agency Comments**

Most of the agencies were concerned about socio-economic and/or natural environmental impacts. Most commented on proposed transit facilities as well as proposed highway improvements. There was more general support for Alternatives 3A or 3B.

*National Capital Planning Commission (NCPC), William G. Dowd*

The NCPC commented on possible locations for transitway yard/shop facilities. They prefer Site 1 to Sites 4 or 5 at the Shady Grove location due to better accessibility to Metrorail and to mass transit serving the Washington metropolitan area. Additionally, they indicated a need to study visual and aesthetic impacts of infrastructure required to support a planned transitway yard and storage track configuration especially as may affect the National Institute of Standards and Technology located west of I-270 in Gaithersburg.

*Maryland Department of Natural Resources (MDNR), Lori A. Byrne*

The MDNR has indicated that there are no known bald eagle nests in the project area. However, a survey should be conducted for any affected areas of potential habitat that occur for the Short's Rockcress, a state-listed plant species. [Subsequent coordination with MDNR indicates

the species is no longer a state-listed plant species.]

Project planners should avoid placement of new roads in the forest interior to minimize project impacts on forest interior dwelling birds species.

*Montgomery County Department of Public Works and Transportation (DPW&T), Albert J. Genetti, Jr.*

The DPW&T supports both the CCT alignment and Alternatives 3A or 3B. They do not support Alternative 5 or the Premium Bus (Alternative 5C), due to residential and business displacements and inconsistency with area Master Plans. They favor extending the CCT alignment to north of Clarksburg. The capital cost estimates for the maintenance yards/bus garages as well as annual operating costs for LRT and BRT should have been included in the DEIS. More explanation is needed as to why BRT provides better travel time savings over LRT. The owner and operator of the LRT/BRT and its connection to Metrorail at Shady Grove and with WMATA and Ride On needs to be discussed. The COMSAT location for a potential transitway yard/shop facility should be eliminated. Sites 4 and 5 at Metropolitan Grove and site 1 at Shady Grove are endorsed. The DPW&T is interested in continuous HOV lanes in both directions within Montgomery County and into Frederick County. DPW&T does not support the construction of the entire C/D system; Middlebrook Road to Father Hurley Boulevard is acceptable though.

*US Environmental Protection Agency (EPA), Ms. Barbara Rudnick*

EPA rated the DEIS "EC" (Environmental Concerns), and "Category 2" (Insufficient Information). EPA favors transit, supports HOV, and recommends avoidance and minimization efforts to impacted parklands, aquatic and terrestrial resources and wildlife. EPA supports US Army Corps of Engineers (USACE) and US Fish and Wildlife Service (USFWS) comments on the DEIS. EPA asked for more information pertaining specifically to the identification and outreach efforts to date of Environmental Justice communities.

*US Fish and Wildlife Service (USFWS), Mr. William Schultz*

USFWS endorses Alternative 3A or 3B and opposes Alternatives 4A, 4B, and 5C. USFWS supports Alternatives 5A or 5B with modifications, especially to

reduce impacts to Seneca Creek State Park. USFWS recommends reorientation of proposed transit facilities at Decoverly Station, generally approves the Shady Grove location, and is not opposed to the COMSAT location for transit facilities. USFWS does not favor sites 4 or 5 at the Metropolitan Grove location for transit yard/shop facilities.

*Maryland Department of Planning (MDP), Ms. Bihui Xu*

MDP prefers Alternatives 3A or 3B and supports expanded bus service and LRT. They recommend preparation of a capacity preservation plan for the highway component of the Preferred Alternative, including an analysis of induced vehicle miles traveled. They request that an overview of the Smart Growth Act be included in the Final Environmental Impact Statement (FEIS), as well as development of the TSM/TDM Alternative. An evaluation of pedestrian access to proposed transit stations should also be included in the FEIS.

*US Army Corps of Engineers (USACE), Mr. Steve Elinsky*

The USACE is concerned that new interchanges could invite development that will create more congestion, negating the purpose of the project to handle increased congestion along the I-270/US 15 Corridor. The USACE indicated that jurisdictional wetland determinations for transit facilities as well as for any design modifications/refinements should be included in the FEIS. Impacts on hydrology sources for affected aquatic resources need to be included also in the FEIS. Highway access is not shown at School Drive Station and at Decoverly Station. Manekin Station should be relocated. Sites 1 through 3 at COMSAT Station cause excessive aquatic resource impacts. The USACE recommended avoiding impacts to aquatic resources where practicable and feasible and minimizing to the greatest extent practicable where avoidance is not possible. The USACE requested consideration of using Old Baltimore Road instead of Newcut Road for the location of a new interchange. Subsequent meetings between SHA, USACE, and Montgomery County have produced an agreement that the interchange at Newcut Road is needed.

*National Park Service (NPS), Susan Trail*

The NPS favors Alternatives 3A/B and 4A/B, and has determined that Alternatives 5A/B/C will create unacceptable impacts to the Monocacy National



Battlefield. NPS indicates their opinion that the interstate should remain within its present right-of-way to the greatest extent possible and that new visual intrusions, such as high retaining walls, should not be introduced into this historic setting. The document description of the Monocacy Battlefield requires improvement including a summary of the battle and related mapping, as well as an elevated and separate placement, based on its importance as a National Historic Landmark. The potential presence of bald eagles, further noise studies, and the need for landscape surveys should be addressed.

2004 Express Toll Lane Public Workshops

Public workshops introducing the ETL concepts (Alternatives 6A/B and 7A/B) and summarizing updated engineering and environmental studies were held on June 29 and 30, 2004 in Montgomery and Frederick counties. Interested persons had the opportunity to offer verbal or written comments for consideration as part of the project record. In all, 105 people attended the workshops and 21 offered written comments. *Table VII-2* provides a summary of the written comments received. All individuals who submitted written comments received individualized responses from SHA/MTA.

The following exhibits describing ETLs and the updated studies were on display at the workshops:

Express Toll Lane Display Boards

- An Alternative to Congestion
- Benefits
- Managing Congestion Success Stories
- ETLs in Maryland
- HOT, HOV and ETLs – Differences

Project Specific Display Boards

- Introduction/Purpose
- Project Background
- I-270 ETL Concept
- Studies Since Public Hearing
- Next Steps/Schedule

The meetings were set in an “open house” workshop format to provide the best opportunity for the general public to interact with the project team.

At the Montgomery County Workshop there was a relatively even mix of proponents and opponents to the ETL initiative. The primary complaint heard was the perceived notion of additional public taxing due to tolling. There were also equity concerns, primarily questioning the fairness of ETLs. The proponents felt that ETLs were a clever idea and they were supportive of whatever option provided the best opportunity for the project to move forward and for additional capacity as soon as possible. In general, a majority of the general public simply wanted a better understanding of how the ETL technology would work. Enforcement was of particular interest since many in attendance were upset over extensive HOV lane violations. Several residents from the bordering Fox Chapel and Brighton West communities attended and voiced their concern over the potential right-of-way acquisitions and close proximity of the build alternatives to their homes, including noise and home value impacts. The Brighton West community is located in an identified Environmental Justice (EJ) area; outreach will also continue as part of the EJ outreach program for the project.

At the Frederick County Workshop opinions ranged from support of ETL alternatives and overall expansion to concern for the affordability of tolls and increased commute costs. A Sierra Club member and a few other attendees expressed concern about wider roads and whether the ETL alternatives would reduce congestion. As in Montgomery County, the lack of enforcement on the current HOV lanes was widely seen as an issue. A few citizens expressed disapproval of the widening of US 15 through Frederick and insisted on funding other planned roadways shown on Frederick County’s Master Plan. Mostly, the attending citizens were interested in better explanations of the proposed lane configurations, access points and projected traffic data.

Written comments were received from 22 citizens. The number of comments were divided fairly equally in favor of and against the ETL Concept; a ratio similar to that of individuals who spoke with project team members. Funding and equity concerns were prevalent, with alternative suggestions to improve congestion including improvement of Metrorail, and adding a new rail system northward to Frederick. Fox Chapel and Brighton West residents expressed noise and property

Table VII-2: Summary of Written Comments Received at the ETL Public Workshops

NAME	HOME CITY AND STATE	COMMENTS/CONCERNS/SUGGESTIONS	DATE OF SHA/MTA REPLY TO COMMENTS
Barry Udvardy	Germantown, MD	Concerns about traffic congestion, Express Toll Lanes (ETLs) value pricing, high occupancy toll lanes (HOT Lanes) and HOV lanes	7/20/2004
Don Linton	Fredrick, MD	Supports improvements in the city of Frederick area	7/21/2004
Saskia Van Oot	Frederick, MD	Concerned about transportation improvements and parking facilities	7/22/2004
R.W. Wolf	Frederick, MD	General inquiries on funding	7/26/2004
Jon Arnold	Frederick, MD	Gave reasons for recommending a MARC system extension to Frederick	7/28/2004
Leonard May	Frederick, MD	Made a comment on building something quickly	7/28/2004
Gary Sandman	Urbana, MD	Gave reasons for recommending a Metrorail extension to Frederick and reversible toll lanes	7/28/2004
Deborah Franklin	Germantown, MD	Comments and inquires on Express Toll Lanes (ETLs)	8/2/2004
David Griffith	Boyds, MD	Opposes the Express Toll Lane (ETL) concept on I-270 (purpose, strategy and pricing)	8/2/2004
Dean Herrin	Frederick, MD	Explained reasons for opposing the replacement of the HOV lane on I -270 with the Express Toll Lane (ETL) option	8/3/2004
Robert Smart	Middletown, MD	Inquiring about Express Toll Lanes (ETLs)	8/3/2004
Mary Robinson	Gaithersburg, MD	Concerns about Express Toll Lanes (ETLs) and value pricing	8/9/2004
Mr. and Mrs. Michael A. Wallace	Rockville, MD	Inquiring about Express Toll Lanes (ETLs) and value pricing	8/9/2004
Kevin Lancaster	Frederick, MD	Suggests ways to improve congestion along the I-270 Corridor and inquires about value pricing for ETLs	8/16/2004
David Franklin	Germantown, MD	Concerned about impacts to property and value pricing for Express Toll Lanes (ETLs)	8/17/2004
Derrick C. Tabor	Gaithersburg, MD	Does not support the Express Toll Lanes (ETLs) concept on I-270	8/30/2004
Karen Lewis	Montgomery Village, MD	Concerns about Express Toll Lanes (ETLs) fee	9/2/2004
Joseph Magluilo	Walkersville, MD	Opposes the Express Toll Lanes (ETLs)	9/2/2004
Sherri Lynn Miller	Frederick, MD	Explained reasons for supporting a light rail system in lieu of Express Lanes (ETLs)	9/3/2004
Creighton & Dana Andes	Frederick, MD	Concerns: value pricing, Express Toll Lanes (ETLs) (benefit, purpose), ultimate goal for Shady Grove Metro Station and the Metropolitan Grove MARC Station	9/8/2004
Lawrence Evans	Germantown, MD	Concerns: traffic volume; highways included in the CLRP (M 83); project studies underway for a new Potomac River Crossing; effect of projects in the CLRP	10/20/2004



depreciation concerns due to the close proximity of the alternatives to their community.

Concerns cited in the written comments include:

*General Comments [4]*

- Start project now/implement as soon as possible (3)
- Build a second crossing over the Potomac River (1)

*Highway-Related Comments [16]*

- Equity concerns for lower income individuals as well as for the general public (5)
- Access issues with ETL (2)
- Exactly how will the addition of ETLs be funded? (2)
- Another means of imposing taxes on the driving community (2)
- Build reversible lanes (2)
- How will tolls be enforced? (1)
- Displays of currently operating tolls in California/Florida may not accurately reflect the future of operating tolls in Maryland (1)
- Support for HOV lanes (1)

*Transit-Related Comments [6]*

- Extend Metro to Frederick (2)
- Build a rail system along I-270 mainline (2)
- Add one non-stop train per hour from Shady Grove to Metro Center (1)
- Improve the MARC line (1)

**Summary of Additional Public Involvement**

In addition to the public hearings and ETL workshops, the SHA and MTA have met with citizens to discuss the I-270/US 15 Multi-Modal Corridor Study on 18 occasions since 2002, either at workshops or community civic association meetings that were open to the public. In support of public awareness of these meetings and their purpose, various newsletters and brochures were distributed along with press releases. At the public meetings, citizens were invited to provide verbal or written comments concerning the material presented at the meeting or comments on the project in general.

**General Public and Community Briefings**

The following is a list of meetings and briefings that have taken place since the June 2002 Public Hearings (not including the 2004 ETL Workshops) where members of the project team were present. The list includes any meeting where the public attended.

- November 1, 2002 – Members of the I-270/US 15 Project Team and SHA met with representatives of the Frederick County Public Schools Facilities Services, Urbana Elementary School, Urbana Elementary School PTA, Urbana Softball/Baseball & Urbana Recreation Council, Araby Civic Association and Urbana Soccer to discuss the potential impacts to the recreation fields located just east of I-270 and north of the MD 80 interchange. The impacted area is located within the Urbana Elementary School property. The recreation fields are used by local youth and adult recreation leagues to facilitate their local programs in addition to the use by the Frederick County Public Schools. The sports organization representatives noted their lack of athletic fields in the area that are available for their use. SHA presented several potential concepts to reduce impacts and/or re-orient the athletic fields if the impacts from a build alternative could not be avoided. The local representatives provided their input on the potential concepts.
- May 21, 2003 – Attended a meeting with the Market Square Advisory Group where MTA discussed a realignment proposal introduced by a citizen that lived in the Kentlands. MTA studied the alignment alternatives and reported its findings back to the community in September, 2004.
- August 25, 2003 – Participated in a Fox Chapel Community Meeting to provide an update on the project and present findings of a study to reduce community impacts. Of the 49 entries on the sign-in sheet, approximately ten to fifteen percent represented minority populations. The project team informed the attendees that all 35 residential displacements shown at the 2002 Public Hearings and in the 2002 DEIS could be avoided with mitigation and minimization measures that would include retaining walls. Several citizens inquired about potential impacts to their individual

properties, while others expressed concern with noise impacts. It was explained that further FHWA coordination is required to determine the magnitude of potential impact avoidance or minimization efforts. The project team was able to incorporate a retaining wall into the design that would avoid any displacement and the design was shown at the 2004 Public Workshops.

- March 30, 2004 – The National Association of Industrial and Office Properties, Frederick County Chapter invited SHA to provide a project briefing on the I-270/US 15 Multi-Modal Corridor project and to describe the recent consideration of ETLs. Approximately 80 people were in attendance at the monthly chapter meeting. Questions were raised that sought clarification of the project goals, alternatives under consideration, how the ETLs would benefit Frederick County commuters and when potential improvements would be implemented. The project team responded to these questions with the current understanding of the project schedule, as well as an explanation of the alternatives within Frederick County.
- September 23, 2004 – Met with residents of the Kentlands community and City of Gaithersburg representatives to present the results of a CCT mainline realignment study. The study had been requested by the community earlier in 2004 to provide a new station and direct access from the community onto the proposed CCT. The study team determined that it was impractical and not cost efficient to realign the CCT alignment through the Kentlands community due to the additional circuitry of the realignment. Some attendees expressed displeasure with the decision but understood the magnitude of the additional costs.
- October 17, 2004 – The Clover Hill Community Association asked SHA to provide a project briefing on the I-270/US 15 Multi-Modal Corridor project and to describe the recent consideration of ETLs. Approximately 20 people were in attendance at the regular community board meeting. The public asked questions regarding the estimated completion date of the study, when US 15 improvements would be implemented and if any homes along US 15 would be displaced. The project team addressed

these questions, discussed the current project schedule and explained that a few homes along US 15 may be displaced but more detailed engineering studies would be completed in the design phase.

- January 24, 2005 – A Clarksburg Civic Association meeting was held where the SHA presented an update on the I-270/US 15 Multi-Modal Corridor project and described the concept of ETLs. Most of the public comments were in regard to the slow overall progress of the Multi-Modal Corridor Study and inquiries towards the estimated completion of the Study. Several other comments centered on issues regarding ETLs, including access, enforcement and equity concerns. The project team provided websites for the Association members to find out more information concerning ETLs and Maryland’s overall initiative statewide.
- April 20, 2006 – Representatives of the I-270/US 15 project team met with the Brighton West Community Board to discuss the I-270 widening (shown in all build alternatives) proposed adjacent to this community, located in Gaithersburg. The Brighton West community described existing conditions related to property ownership and utilities. The I-270 Team requested further details on the utility services to each unit/set of units to assist with the identification of building displacements. There is potential for affecting many of the individual utility services without physically displacing a unit through right-of-way acquisition. The board members asked how their individual properties would be appraised and if they should defer improvements or maintenance. The project team responded by indicating a property that is well maintained with improvements would be reflected with a higher appraisal value. He advised the board to make the necessary improvements to protect their real estate investment and not to wait for a project decision. The team recommended the Brighton West Community Board contact SHA’s project manager for a follow-up meeting in Winter 2006/2007 for all interested members of the Brighton West community.
- April 26, 2006 – A meeting was held with the North Bethesda TMD to brief the group on the status of the I-270/US 15 Multi-Modal Corridor Study.



The group expressed support towards the study. Comments ranged from understanding ETLs better to questions regarding the CCT.

- May 25, 2006 – Project team representatives provided updates on the CCT to the Clarksburg Civic Association. Association members asked about why the Red Metro Line was not being extended; if express buses could be provided to Shady Grove from points north without stopping; why the northern terminal was at COMSAT; and ETL design details.
- June 28, 2006 – Several members of the project team participated in a public meeting sponsored by the City of Gaithersburg to introduce the proposed CCT realignment option through the England/Crown Farm historic property to the surrounding communities. Residents generally expressed concerns regarding traffic, noise, pedestrian access, and developer benefits.
- September 13, 2006 – Participated in the Germantown Alliance Meeting to present the current status of the study. There were no comments and questions of note.
- September 18, 2006 – MTA representatives participated in Montgomery County's regularly scheduled Upcounty Citizens Advisory Committee Meeting to present the current status of the CCT as part of the I-270/US 15 Multi-Modal Corridor Study. No minutes were reported.
- September 25, 2006 – A Clarksburg Civic Association Meeting was held to present an update on the various transit and roadway improvements proposed for the area. Several elected officials were in attendance and a request was made to determine the travel time difference between the CCT and I-270. The project team has completed this request.
- October 4, 2006 – Project team members, the MTA Planning Director and the SHA's Director of Planning and Preliminary Engineering participated in a press event and tour of the CCT and I-270 where the State provided an update on the projects and introduced a Public-Private Partnership (P3) initiative to the press. Requests for Expressions of Interest and Proposals have been advertised.

- January 30, 2007 – Participated in a Public Hearing for the I-270/MD 121 interchange project near the northern terminus of the CCT. Displays were set up and staff was on hand to answer any questions attendees had on the CCT. Hearing speakers indicated a need for the interchange improvements and better access to the proposed park and ride lot at the COMSAT transitway station.
- February 17, 2007 – Project team members presented information about the project at a vendor/exhibitor table discussing the project at the Asian Spring New Year Celebration in Frederick. The table received significant attention from some attendees and many questions and comments were fielded. Ten people completed a two-page survey on the project and two were added to the project mailing list.
- March 14, 2007 – Members of the project team met with the Germantown Alliance to update them on the status of the project. Questions regarding scheduling delays, expected completion date, county contributions to the study, and why ETLs were not being considered in southern Montgomery County or at the Monocacy Battlefield were fielded.
- May 7, 2007 – The Frederick Area Committee on Transportation invited SHA to provide a project briefing on the I-270/US 15 Multi-Modal Corridor project. Approximately 15 people were in attendance at the monthly meeting. The project team provided an update on the alternatives description and the project schedule milestones. Questions were raised regarding the public sentiment towards transit alternatives in Montgomery County, project construction funding and the ability to break out specific proposed improvements in Frederick County. In addition, the attendees asked if it would be possible to begin formulating project phasing plans. The project team responded to these questions with the current understanding of the project schedule and constraints.
- June 7, 2007 – An informal public meeting was held in which transportation improvement alternatives and corresponding impacts for the US 15/Monocacy Boulevard Project Planning Study was presented. The open house allowed for attendees to conduct a

self-paced review of important project information and meet with representatives of SHA. Frederick County and Frederick City representatives were available to receive comments and answer questions.

- November 14, 2007 – Attended the Observation Drive Public Meeting held in Clarksburg by the Montgomery County DPW&T. MTA presented a display showing the CCT alignment and its relationship to the proposed Observation Drive extension.
- May 14, 2008 – Project team representatives presented a detailed briefing of the Corridor Cities Transitway to the Commercial Real Estate Womens Organization. The presentation included a project overview, a description of both transit and highway alternatives from the DEIS and the AA/EA, and a summary of preliminary ridership results, capital costs and operating and maintenance costs.
- September 28, 2008 – SHA contacted the 4th Annual Festival Latino de Frederick organizers and were granted permission to conduct public outreach to the Hispanic community of Frederick and surrounding areas on behalf of several SHA local projects, including the I-270/US 15 Multi-Modal Corridor Study. SHA staff represented the study team by distributing fliers (in Spanish and English), displaying project boards and answering questions from festival attendees. The study team's goal was to reach out to, and obtain information from, a population that may not otherwise be involved in the project planning process due to government distrust, language barriers and/or economic reasons. Approximately 100 individuals of Hispanic and other ethnic backgrounds visited with SHA staff. More than 24 survey forms were submitted during the festival stating their concerns with existing traffic conditions or their preference to either ETLs or the CCT.
- October 3, 2008 – The Gaithersburg-Germantown Chamber of Commerce asked SHA to provide a project briefing on the I-270/US 15 Multi-Modal Corridor project to the study area Chambers of Commerce (including Montgomery County and Frederick County). Approximately 7 people were in attendance at the briefing. The project team provided an update on the alternatives description

and the project schedule milestones. The Chamber of Commerce representative asked how the corridor businesses would benefit by the various transportation alternatives being evaluated. The project team described these benefits and also discussed the project schedule to reach a Locally Preferred Alternative decision.

- October 6, 2008 – Project team representatives presented a detailed briefing of the Corridor Cities Transitway to the Upcounty Advisory Board, an organization of northern Montgomery County businesses and community associations. The presentation included a project overview; description of both transit and highway alternatives from the DEIS and the AA/EA; a summary of preliminary ridership results, capital costs and operating and maintenance costs; and a discussion of the Federal Transit Administration's New Starts process. Some follow-up discussions centered around bus operations on I-270 and express bus operations on the CCT.
- February 10, 2009 – The Montgomery County Chamber of Commerce invited SHA and MTA to provide a project briefing on the I-270/US 15 Multi-Modal Corridor project to their monthly Infrastructure and Transportation Committee meeting. Approximately 25 people were in attendance for the briefing. The project team provided an update on the highway and transit alternatives, the preliminary impacts, construction costs and project milestones/decisions to be completed. Questions from the audience centered on the ability of the CCT to meet transit demand, if the CCT was a funding priority with MDOT versus the Red Line (Baltimore) and Purple Line (Silver Spring), if a Public-Private Partnership was possible, and whether the CCT cost effectiveness values were going to be able to compete nationally with other New Starts transit projects. The project team responded to these questions and clarified other points from the presentation.
- February 10, 2009 – Project team representatives presented a detailed briefing of the Corridor Cities Transitway to the Action Committee for Transit. The presentation included a project overview; description of both transit and highway alternatives



from the DEIS and the AA/EA; and a summary of preliminary ridership results, capital costs and operating and maintenance costs. The group expressed great interest in the project but expressed concerns with regard to limitations of funding and competition with other Maryland transit projects.

- March 9, 2009 – The Frederick Area Committee on Transportation invited SHA and MTA to provide a project update on the I-270/US 15 Multi-Modal Corridor project at their monthly meeting. Approximately 30 people were in attendance for the briefing. The project team provided an update on the highway and transit alternatives, the preliminary impacts, construction costs and project milestones, and decisions to be completed in the next few months. It was mentioned the project will be holding a set of public hearings on the AA/EA document in the near future and everyone was encouraged to watch for the meeting announcements soon. Several questions were responded to including clarification of various portions of the alternatives descriptions and the ETL operations. The project team responded to these questions and clarified other points from the presentation.
- April 20, 2009 – SHA was invited by the Frederick County Chamber of Commerce to provide a project briefing on the I-270/US 15 Multi-Modal Corridor project at regularly scheduled Trustees Luncheon meeting. Approximately 60 people were in attendance for the briefing. The project team provided an update on the highway and transit alternatives, the preliminary impacts, construction costs and project milestones/decisions to be completed. Several questions were fielded from the audience centered on the project schedule, prioritized identification of I-270 or US 15 sections that may be constructed first, and are other managed lane options being considered such as HOT lane designations. The project team responded to these questions and clarified other points from the presentation.

Organizations commonly represented in the meetings discussed above include representatives from SHA, MTA, Maryland-National Capital Park and Planning

Commission (M-NCPPC), Frederick County Division of Planning, Montgomery County DPW&T, Greater Shady Grove Civic Alliance, Upcounty Citizens Advisory Board, Frederick Area Committee on Transportation (FACT), Upcounty Regional Services Center, and Montgomery County Chamber of Commerce.

Public outreach initiatives were extended to further publicize the study activities to the additional civic associations and organizations within the project area. Examples of these groups included the Frederick County Chamber of Commerce, the Urbana Civic Association, the Shady Grove Alliance, and citizens from the Town of Hyattstown.

**Project Newsletters and Media Outreach**

Newsletters and brochures were distributed in May and June of 2004 to coincide with the ETL Public Workshops. These newsletters were distributed to the study’s mailing list of approximately 4,500 individuals/ organizations. In addition, newspaper articles, advertisements, radio/cable television interviews and press releases were utilized to keep and increase public awareness of the study’s activities and progress.

The I-270/US 15 project team has used various methods of advertising project activities to the public including the following newspapers and periodicals:

- *The Baltimore Sun*
- *The Washington Post*
- *The Montgomery Gazette*
- *The Montgomery Journal*
- *The Afro-American (Washington, DC)*
- *El Montgomery*
- *The Asian Fortune*
- *The Washington Jewish Week*
- *The Frederick News Post*
- *The Frederick Gazette*

Public notices were used to announce the 2004 ETL Public Workshops.

Another newsletter was distributed in March 2009 providing additional project updates. This newsletter was mailed to the stakeholders in the project corridor.

**Interagency Coordination**

Five interagency review meetings regarding the I-270/US 15 Multi-Modal Corridor project were held since the June 2002 Public Hearings on July 17, 2002; June 16, August 18, and September 15, 2004; and August 16, 2006. Participating agencies included the MDNR, EPA, USACE, Federal Highway Administration (FHWA), Maryland Department of the Environment (MDE), M-NCPPC, National Park Service (NPS), Maryland Historical Trust (MHT), Maryland Department of Planning (MDP), USFWS, and National Marine Fisheries (NMF).

**July 17, 2002 Interagency Review Meeting**

On July 17, 2002, the project team presented a status update to the agency representatives. The primary project activity discussed was the I-270/US 15 Expert Land Use Panel (Panel) results. Agency representatives were briefed on the composition of the Panel and public involvement associated with the land use forecasting process. The two phase nature of the panel process was also described. The first phase consisted of a qualitative discussion on the transportation factors that affect land use patterns and consensus was reached that transportation is one of many factors affecting land use patterns, highway locations affect population more than employment, and transit impacts will take longer to realize than highway impacts. Phase II involved a quantitative allocation of population and employment to zones for the no-build and build options using the criteria agreed upon in Phase I. It was noted that there were large differences between individual panel responses on some zone allocations.

**Issues Discussed**

The USACE representative asked how the interchanges were considered as part of the study. SHA responded that there was limited discussion regarding access by the panel. The panel members considered interchange improvements to be minor compared to the capacity that would be added to the entire corridor.

The USACE representative also asked about the second graphic that showed the potential for growth associated with build alternatives. Frederick City was not shown as a growth area. SHA clarified that the second graphic shows only those areas that would have a measurable

increase in population over the No-Build Alternative. Frederick City would have a comparable increase with the No-Build and any of the build alternatives. The USACE representative asked about the location of the Priority Funding Areas (PFAs) in relation to the corridor. SHA responded that there are gaps in the corridor, which are shown in the DEIS.

The MDNR representative asked about how the boundary established by the expert panel compared to that established for the SCEA. SHA responded that the SCEA boundary is larger to the south but smaller to the north.

**June 16, 2004 Interagency Review Meeting**

On June 16, 2004, the project team presented a status update to the agency representatives. The primary project activity was the development of an environmental reevaluation to document the ETL Option. The ETL Option was then summarized. June 2004 open houses were announced to the agencies. The open house meetings would educate the general public on the ETL option and will inform them of project advancements since the 2002 Public Hearings.

**Issues Discussed**

The USFWS representative asked what prevents people from switching lanes to avoid paying for using the toll lanes. SHA responded that the electronic tolls would be spaced along the length of the toll lanes but that enforcement issues would have to be addressed.

The USFWS representative asked about the effects of the Newcut Road interchange on development. The SHA project manager responded that the proposed development is not dependent upon the interchange and that it is part of the local master plan. SHA added that the interchange is located within a PFA. SHA will present the project information, again, at an Interagency Meeting after the open houses.

**August 18, 2004 Interagency Review Meeting**

On August 18, 2004, the project team presented a status update to the agency representatives. The primary purpose of the presentation was to provide an overview of the open houses held in June for the project. The purpose of the open houses was to introduce the ETL



concept to the public and to update the public on the project. There was mixed support and opposition to the ETL concept.

### Issues Discussed

The USFWS commented that introducing the ETL concept for so many projects at once may be problematic for the public. The SHA noted that it is necessary because of budget constraints and that it is better to let the public know well in advance. The SHA then noted that the public will still have a choice to use general purpose lanes.

The MDP representative noted that Alternative 5 has the maximum widening and is the only alternative that incorporates the ETLs. The SHA stated that ETLs could also be used with Alternative 3.

The SHA facilitator asked if agency representatives would be interested in presentations on managed lanes and continuous flow lanes. The agency representatives indicated that they would be interested.

### September 15, 2004 Interagency Review Meeting

On September 15, 2004, Parsons Brinckerhoff gave a presentation of Maryland's Statewide ETL initiative. The I-270 Corridor is an integral component of the initiative and represents one of the first potential projects to be implemented in Maryland.

The comments and questions following the presentation were not specific to the I-270/US 15 Multi-Modal Corridor Study. Questions were primarily in regard to the definition of ETLs and how they differ from other managed lane facilities.

### August 16, 2006 Interagency Review Meeting

On August 16, 2006, the project team presented a status update to the agency representatives. The primary purpose of the presentation was to provide an overview of project activities since the previous status update to the Interagency Review Group, held in August 2004. The project team provided background information regarding the 2002 Public Hearing and the minimization efforts that were presented at the 2004 ETL Public Workshops. The newer issues were as follows:

- The project team has been working to develop the detailed preliminary engineering, operations, traffic forecasting and analysis, and environmental impacts.
- Several community meetings and public presentations to local organizations have occurred since the June 2004 Workshop to describe the ETL concept.
- June 2005, FHWA and FTA agreed that the ETLs shall be documented in an Environmental Assessment document with a public meeting for review and comment.

## Coordination with Local Agencies & Elected Officials

The I-270/US 15 project team has had extensive coordination with local agencies and provided several briefings to local agency representatives as well as elected officials. The following section provides summaries of the project team's meetings with local agencies and elected officials including a breakout section at the end dealing with coordination involving the Crown Farm property. A list of correspondence between the project team and local agencies is provided in Appendix D.

- December 9, 2002 – Provided a project update to the Montgomery County Council on the next steps for the project.
- October 11, 2004 – Participated in a meeting with the City of Gaithersburg Mayor and Council to provide an update on the I-270/US 15 Multi-Modal Corridor Study schedule, the CCT and development coordination, and ETLs.
- November 16, 2004 – Participated in a Frederick County Board of Commissioners Work Session to brief the Board on the status of the project.
- December 6, 2004 – Participated in a City of Rockville Mayor and Council Work Session to brief the group on the status of the project.
- February 3, 2005 – Participated in a meeting with the City of Gaithersburg to discuss a proposed development adjacent to the CCT and to discuss the project needs and transit oriented development (TOD) potential at this location.
- January 11, 2005 – Met with the City of Gaithersburg and a representative from the Maryland Department of Business and Economic Development on to discuss proposed development plans submitted by MedImmune. A proposed parking structure would be directly impacted by two possible Kentlands alignments under study.
- January 13, 2005 – Provided a project briefing to Montgomery County Council members Michael Knapp and Nancy Floreen.
- March 8, 2005 – Met with representatives from USACE and the M-NCPPC to discuss the developments and issues regarding the proposed I-270/Newcut Road interchange and the suggested alternative ramp configurations to limit natural environmental impacts.
- April 27, 2005 – Met with City of Gaithersburg staff following the team meeting on April 12<sup>th</sup> to discuss developer submittals currently being considered by the city. Specifically, the city requested that MTA prepare comments for the Casey West parcel development plan at Metropolitan Grove. A formal letter was prepared by MTA, sent on April 14<sup>th</sup> and entered into the record by the city. Comments related to location of the platform and track alignment, parking needs, vehicle and bus access, and transit oriented development considerations.
- May 12, 2005 – Provided a telephone briefing on the transit project status to a representative from the office of Delegate Galen R. Clagett, District 3A, Frederick County. Referred the representative to SHA for an update on the highway project status.
- July 6, 2005 – Participated in a meeting with Montgomery County Department of Public Works & Transportation (DPW&T) regarding their planning of the Observation Drive extension from its terminus north to beyond COMSAT. The CCT is proposed to travel down the median of this new roadway. MTA will request that stormwater management (SWM) needs and the hiker/biker trail be incorporated into the roadway design. DPW&T is determining the official Master Plan alignment for the roadway and will compare it with the proposed CCT alignment. The CCT alignment can be

adjusted for minor differences assuming project criteria are maintained.

- July 11, 2005 – Participated in a City of Gaithersburg Mayor and Council Work Session where the proposed Casey West development at Metropolitan Grove was discussed.
- August 1, 2005 – Attended a City of Gaithersburg Mayor and Council meeting where the Schematic Development Plan for Casey West was approved.
- October 20, 2005 – Met with M-NCPPC staff to discuss right-of-way concerns regarding a proposed development adjacent to the transitway. The New Covenant Fellowship Church, along Waring Station Road just north of Seneca Creek State Park, is proposing to construct a senior housing facility adjacent to its existing church. Additional right-of-way for the transitway and I-270 widening is needed from the property. Also, construction of the transitway could impact an existing parking lot and SWM pond. Following the meeting, MTA sent a letter to M-NCPPC that listed the project needs.
- October 20, 2005 – Attended a briefing before the Maryland State House Appropriations Committee, Subcommittee on Transportation and Environment, where Secretary Flanagan testified on matters relating to transit funding and planning projects in the Washington, DC region, including the CCT.
- November 28, 2005 – Organized and conducted a meeting with representatives from M-NCPPC, the Cities of Rockville and Gaithersburg, and Montgomery County to present project progress on topics including National Environmental Policy Act (NEPA) documentations, project schedule, right-of-way research, operations and maintenance (O&M) facilities, hiker/biker trail study, and stormwater management. The meeting objective was primarily to discuss the local jurisdictions efforts in preserving the project's right-of-way needs.
- November 28, 2005 – Met with Montgomery County DPW&T staff and others to discuss Watkins Mill Road Extended. The CCT is proposed to cross under this new roadway. MTA is studying how the proposed CCT underpass can be built under proposed Watkins Mill Road and adjacent to the



proposed Watkins Mill Road bridge over CSX. If Watkins Mill Road and the bridge over CSX are built and opened to traffic prior to the CCT underpass being completed, the CCT underpass would disrupt Watkins Mill Road traffic. This would substantially increase the CCT project costs. The results of the study will be forwarded to the Maryland Department of Transportation (MDOT) for review. The construction and maintenance of traffic costs could possibly be reduced if the CCT underpass could be constructed at the same time as Watkins Mill Road and the bridge over CSX. It was anticipated that MDOT will need to negotiate with the developer on terms to share the CCT capital costs.

- December 20, 2005 – Met with Montgomery County DPW&T to discuss the potential conflict with the county's proposed police impound lot facility improvements and the CCT's consideration of the site for its O&M facility. The county has completed plans and is nearly ready to begin construction. MTA proposed a possible relocation of their facility, prior to building the facility, to a site closer to I-270. The county was reluctant to accept this idea and is expected to proceed with its planned improvements at the current site. The CCT will either have to find another site for its O&M facility or pay for the relocation of the police facility. MTA will evaluate this to assess the additional cost of relocating them, how it would affect the project's cost effectiveness, and how it would affect the implementation of the CCT.
- January 6, 2006 – Provided a project briefing for the CCT (along with Red Line and Bi-County) to Jonathan Martin at the Department of Legislative Services. Of the three projects, Mr. Martin was least concerned about the CCT and indicated that he knew little about the project.
- January 11, 2006 – Met with the City of Rockville and a developer to discuss the developer's plans for a property adjacent to the transitway. The group discussed what the CCT would look like in this area (structures, grading, etc.) and how the developer could modify his plans to improve consistency with the project. The first phase of construction

will have little impact on the project. The second phase, likely to be approved in summer 2006, will have longer frontage on the CCT and will need to reconsider its open space requirement, as the CCT will impact it.

- January 12, 2006 – Provided a project briefing to the Montgomery County Chamber of Commerce – Transportation and Land Use Committee on the I-270/US 15 Multi-Modal Corridor Study.
- January 26, 2006 – Provided a project briefing to the Montgomery County Council Transportation and Environment Committee on the I-270/US 15 Multi-Modal Corridor Study.
- March 7, 2006 – Conducted a Local Jurisdiction meeting with the City of Rockville, the City of Gaithersburg, M-NCPPC, and Montgomery County DPW&T to review the project team's finding on the hiker/biker trail study and to ask for input on alignment options. MTA expressed its concerns regarding project funding and if the trail is considered a project cost, it could affect the project's cost effectiveness. The group agreed to identify ways to control project costs. As such, several ideas were discussed to reduce the construction cost and utilize existing trails/roadways where possible.
- March 20, 2006 – Conducted a Local Jurisdiction meeting with the City of Rockville, the City of Gaithersburg, M-NCPPC, and Montgomery County DPW&T to review the project team's finding on the identification of suitable O&M facility needs for both bus rapid transit (BRT) and light rail transit (LRT). MTA identified which sites shown in the 2002 DEIS are no longer under consideration due to development that occurred or engineering issues and presented all of the sites still under consideration including several new sites identified for a BRT facility. One new site off Gude Drive near the City of Rockville was deemed viable by both the city and M-NCPPC as it is in an industrial area. Another site on Crabbs Branch Way is also being considered by SHA and the Maryland Transportation Authority (MDTA) for a CCT maintenance yard.



- April 26, 2006 – Presented project status to the North Bethesda Transportation Management District (TMD) Advisory Committee.
- June 1, 2006 – Met with M-NCPPC and a developer to discuss a development plan for the DANAC property on Decoverly Drive. Typical sections were presented that show a minor impact on a proposed structure. MTA recommended that the developer slightly shift the structure (approximately two feet) to keep it out of the required setback restrictions imposed by Montgomery County. In addition, the group discussed the proposed driveway entrance from Decoverly Drive across the transitway. MTA concluded that the entrance could be signal controlled without significant problem. MTA has asked the developer to submit a letter acknowledging the frequency of transit operations adjacent to the proposed building and expressing support, and possible funding, for the controlled crossing of the driveway entrance.
- June 21, 2006 – Presented project status to the Fort Detrick Alliance, focusing on potential improvements to the interchanges and intersections along US 15.
- August 23, 2006 – Provided a project briefing to the City of Frederick Mayor and Aldermen.
- February 2, 2007 – Joined the MDOT Secretary in a meeting with the Montgomery County delegation in Annapolis. Presented the status of

the CCT and pointed out that the project schedule could be delayed by about twelve months due to problems with the travel demand forecasting efforts. Questions/comments from the delegation related to 1) create a project web site as a way to provide more project information to the public and 2) better explain tolling and how the private sector would recoup its investment on the highway and transit components. Mike Knapp, Montgomery County Councilman, requested that the P3 proposals be provided to him when possible.

- March 27, 2007 – Participated in a meeting at the Secretary's office with representatives from the city of Gaithersburg including Mayor Sidney Katz. The city is planning to study possible improvements to the Kentlands Boulevard Commercial District and asked the Secretary if he would reconsider studying a possible realignment of the CCT to better serve the Kentlands community. The city had eliminated two of the four previous realignment options. MTA informed them of the issues related to studying alternate alignments, possible schedule implications and additional evaluations that would be needed. The meeting attendees agreed that the city would present the idea to the community while performing its commercial area redevelopment. If the idea receives full support from the community, MDOT and MTA would reconsider including the realignment as an option in later stages of the study.
- May 24, 2007 – Provided a project briefing to the City of Frederick Mayor and Frederick County Commissioners at the Frederick County Commissioners' meeting with the municipalities.
- June 12, 2007 – Met with M-NCPPC to discuss the proposed Century XXI development on Century Boulevard. It was proposed that the Montgomery County standard typical section be changed to improve urban design aspects envisioned for the roadway. Montgomery County DPW&T and MTA indicated a strong reluctance to allow any reductions in the roadway width.
- June 16, 2007 – Attended the Four-State Transportation Summit hosted by Frederick County. Henry Kay, MTA, presented information on the CCT and current MTA operations within the county.



- July 12, 2007 – Conducted a project briefing to the Montgomery County Council Transportation and Environment Committee.
- September 12, 2007 – Participated in a meeting with M-NCPPC to discuss growth possibilities for the Germantown area. MTA described how proposed changes in the zoning would take a long time (2+ years) before being recognized by the regional model and transit ridership forecasts.
- December 12, 2007 – A briefing was held with the Clarksburg Chamber of Commerce on the CCT alignment. SHA provided costs and project schedule along with a discussion of the extension of Observation Drive to Stringtown Road. The five to six attendees expressed a desire and urgency to get the CCT built and felt that it would help to lower traffic volumes on locally congested roadways.
- September 24, 2008 – Project team representatives presented a detailed briefing of the Corridor Cities Transitway to the invited elected officials and the general public at a meeting hosted by the City of Gaithersburg and the Gaithersburg-Germantown Chamber of Commerce. The presentation included a project overview; description of both transit and highway alternatives from the DEIS and the AA/EA; and a summary of preliminary ridership results, capital costs and operating and maintenance costs. Discussions focused partly on the proposed construction schedule and the limited funding for the project.
- December 18, 2008 – SHA presented a project update to the Frederick County Municipalities including the Frederick County Board of Commissioners and the City of Frederick Mayor and Board of Aldermen. Approximately 30 people were in attendance and the presentation was broadcasted live on the Frederick County Government Cable TV channel. In addition, the presentation was recorded for internet access and podcast playback from the County's website. The project team provided a detailed update on the highway and transit alternatives, the preliminary impacts, construction costs, project milestones and decisions to be completed in the next few months. It was mentioned the project will be holding a set of

public hearings on the AA/EA document in the near future and everyone was encouraged to watch for the meeting announcements soon. Several questions were responded to including clarification of various portions of the alternatives descriptions and the ETL operations. The project team responded to these questions and clarified other points from the presentation.

- January 21, 2009 – Project team representatives presented a detailed briefing of the Corridor Cities Transitway to the Montgomery County delegation and other interested elected officials in Annapolis. The presentation included a project overview; description of both transit and highway alternatives from the DEIS and the AA/EA; and a summary of preliminary ridership results, capital costs and operating and maintenance costs. One attendee recommended that typical sections for various scenarios be prepared to help visualize the transit alternatives.

#### *Crown Farm Development and Annexation Coordination*

- April 27, 2005 – Met with the City of Gaithersburg to discuss the potential sale and development of the Crown Farm near Shady Grove Road and I-270. The CCT alignment currently bisects this undeveloped property. M-NCPPC is developing concept plans to lay out the property into an efficient street network and has asked MTA to consider realigning the CCT to better follow the layout.
- September 24, 2005 – Participated in a Charrette Work Session on Transportation and Transit for the Crown Farm Property. Although the Maryland Historical Trust lists Crown Farm as a National Register Eligible property, a private developer proposes to purchase the property. The proposed CCT alignment would impact Crown Farm.
- February 6, 2006 – MTA representative attended the Crown Farm Public Hearing at the City of Gaithersburg Mayor and Council Meeting. Provided a short testimony on the issues regarding the proposed annexation of the property and CCT realignment.

- March 13, 2006 – Participated in a City of Gaithersburg Mayor/Council/Planning Commission Work Session where the Crown Farm development was discussed. MTA testified and laid out its position on items related to the proposed realignment of the CCT.
- March 16, 2006 – MTA representatives attended the Montgomery County Planning Board Meeting where the proposed Crown Farm annexation was introduced.
- April 3, 2006 – Attended a Montgomery County Council Planning, Housing, and Economic Development Committee Meeting where the Crown Farm annexation request was discussed. MTA testified and presented the issues related to the proposed CCT realignment.
- April 3, 2006 – Participated in a City of Gaithersburg Mayor and Council Meeting where MTA was invited to present its concerns regarding the proposed realignment of the CCT.
- April 18, 2006 – Attended the Montgomery County Council Meeting where the proposed Crown Farm annexation was introduced.
- April 25, 2006 – Attended the Montgomery County Council Meeting where the proposed Crown Farm annexation was debated and approved by a 7-2 vote.
- July 17, 2006 – Attended the City of Gaithersburg Mayor and Council Meeting where the resolution to annex the Crown Farm was officially introduced.
- August 7, 2006 – Attended the City of Gaithersburg Mayor and Council Meeting where the annexation and zoning change for Crown Farm was unanimously approved.

#### **Focus Group Meetings**

An I-270/US 15 Focus Group, composed of local residents, community leaders, and business owners, met on March 7, 2002. The Focus Group is intended to allow local stakeholders to assist in developing the improvements in the corridor. The Focus Group met to discuss the proposed highway and transit alternatives, preliminary impacts and costs, schedule issues, the CCT, and post location/design public hearing decisions. In attendance were representatives of the Kentlands

Citizens Assembly, the Urbana Civic Association, the Upcounty Citizens Advisory Board, the Clarksburg Civic Association, and the Action Committee for Transit along with members of the M-NCPPC, the Transportation Services Advisory Council, Montgomery County DPW&T, and the Upcounty Regional Services Center.





# **I-270/US 15 Multi-Modal Corridor Study**

Frederick and Montgomery Counties, Maryland



## **Appendix A – Plan Sheets**

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### **Highway**

#### **I-270 and US 15**

- |   |   |
|---|---|
| 1 – Shady Grove Road to Muddy Branch Road | 10 – Monocacy National Battlefield      |
| 2 – MD 117 to Proposed Watkins Mill Road  | 11 – MD 85 to I-70                      |
| 3 – Middlebrook Road to MD 118            | 12 – Jefferson Street to Patrick Street |
| 4 – Father Hurley Boulevard               | 13 – Rosemont Ave. to Opossumtown Pike  |
| 5 – Proposed Newcut Road to MD 121        | 14 – MD 26 to Monocacy Boulevard        |
| 6 – Clarksburg to I-270 Weigh Stations    | 15 – Biggs Ford Road                    |
| 7 – MD 109 to Proposed MD 75              |   |
| 8 – Urbana/MD 80                          |   |
| 9 – Urbana to Scenic Overlook             |   |

#### **MD 75**

- 1 – Proposed MD 75 Extended

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### **Transitway**

- 1 – Shady Grove Metro Station
- 2 – MD 355 to Diamondback Road
- 3 – Key West Avenue to MD 124
- 4 – MD 124 to Seneca Creek State Park
- 5 – Seneca Creek State Park to Germantown
- 6 – Father Hurley Boulevard to Comsat

# ***Appendix A:***

## ***Plan Sheets***





***Appendix B:***  
***Summary of the Relocation Assistance Program of the***  
***Maryland State Highway Administration***





Revised: June 10, 2005  
State Highway Administration - Office of Real Estate

### **SUMMARY OF THE RELOCATION ASSISTANCE PROGRAM OF THE MARYLAND STATE HIGHWAY ADMINISTRATION**

All State Highway Administration projects utilizing Federal funds must comply with the provisions of the Uniform Relocation and Real Property Acquisition Policies Act of 1970 (42 USC 4601) as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), Public Law 105-117 in 1997, and Title 49 CFR Part 24 in 2005. State-funded projects must comply with Sections 12-112 and Subtitle 2, Sections 12-201 to 12-212, of the Real Property Article of the Annotated Code of Maryland.

The State Highway Administration's Office of Real Estate administers the Relocation Assistance Program for the Maryland Department of Transportation.

The aforementioned Federal and State laws require that the State Highway Administration provide relocation assistance payments and advisory services to eligible persons who are displaced by a public project. There are two categories of residential occupants: 180-day owner-occupants and 90-day tenants and short-term owner-occupants. Non-residential occupants may be businesses, farms or non-profit organizations.

A displaced person that has owned and occupied a subject dwelling for at least 180 days prior to the initiation of negotiations for the property may receive a replacement housing payment of up to \$22,500. The replacement housing payment is composed of three parts: a purchase price differential; an increased mortgage interest differential; and reimbursement for incidental settlement expenses.

The purchase price differential is the difference between the value paid by the State Highway Administration for the existing dwelling and the cost to the displaced owner of a comparable replacement dwelling, as determined by the State's replacement housing study.

The increased mortgage interest differential is a payment made to the owner at the time of settlement on the replacement dwelling to negate the effects of less favorable financing in the new situation. The payment is calculated by use of the "buy-down" mortgage method.

Reimbursable incidental expenses are necessary and reasonable incidental costs that are incurred by the displaced person in purchasing a replacement dwelling, excluding pre-paid expenses such as real estate taxes and insurance. The maximum reimbursable amount for these incidental expenses is based upon the cost of the comparable selected in the replacement housing study.

A displaced person who has leased and occupied a subject dwelling for at least 90 days prior to the initiation of negotiations for the property may receive a replacement rental housing payment of up to \$5,250. The replacement rental housing payment is the difference between the

monthly cost of housing for the subject dwelling, plus utilities, and the monthly cost of housing for a comparable replacement rental unit, plus utilities, over a period of 42 months. Owner-occupants of 90-179 days prior to the initiation of negotiations for the subject dwelling are eligible for the same replacement rental housing payments as tenants.

As an alternative to renting, a displaced tenant-occupant may elect to apply the rental replacement housing eligibility amount toward the down payment needed to purchase a replacement dwelling.

The comparable properties used in calculating any replacement housing payment eligibility must comply with all local standards for decent, safe and sanitary (DS&S) housing and be within the financial means of the displaced person.

If affordable, comparable DS&S replacement housing cannot be provided within the statutory maximums of \$22,500 for 180-day owner-occupants or \$5,250 for 90-day tenants or short-term owners, the maximums may be exceeded on a case-by-case basis. This may only be done after the completion and approval of a detailed study that documents the housing problem, explores the available replacement options and selects the most feasible and cost-effective alternative for implementation.

In addition, eligible displaced residential occupants may be reimbursed for the expense of moving personal property up to a maximum distance of fifty (50) miles, using either an actual cost or fixed schedule method.

Actual cost moves are based upon the lower of at least two commercial moving estimates and must be documented with receipted bills or invoices. Other incidental moving expenses, such as utility reconnection charges, may also be paid in the same manner.

As an alternative method, the fixed schedule move offers a lump sum, all-inclusive payment based upon the number of rooms to be moved. Other incidental costs are not separately reimbursable with this method.

Non-residential displaced persons such as businesses, farms or non-profit organizations may also receive reimbursement for the expense of relocating and re-establishing operations at a replacement site on either an actual cost or fixed payment basis.

Under the actual cost method, a non-residential displaced person may receive reimbursement for necessary and reasonable expenses for moving its personal property, the loss of tangible personal property that is not moved, the cost of searching for a replacement site and a re-establishment allowance of up to \$10,000.

The actual reasonable moving expenses may be paid for a move by a commercial mover or for a self-move. Payments for the actual reasonable expenses are limited to a 50-mile radius unless the State determines a longer distance is necessary. The expenses claimed for actual cost moves must be supported by firm bids and receipted bills. An inventory of the items to be moved must be prepared in all cases. In self-moves, the State will negotiate an amount for



payment, usually lower than the lowest acceptable bid. The allowable expenses of a self-move may include amounts paid for equipment hired, the cost of using the business vehicles or equipment, wages paid to persons who participate in the move, the cost of actual supervision of the move, replacement insurance for the personal property moved, costs of licenses or permits required and other related expenses.

In addition to the actual moving expenses mentioned above, the displaced business is entitled to receive a payment for the actual direct losses of tangible personal property that the business is entitled to relocate but elects not to move. These payments may only be made after an effort by the owner to sell the personal property involved. The costs of the sale are also reimbursable moving expenses.

If the business elects not to move or to discontinue the use of an item, the payment shall consist of the lesser of: the fair market value of the item for continued use at the displacement site, less the proceeds from its sale; or the estimated cost of moving the item.

If an item of personal property which is used as part of a business or farm operation is not moved and is promptly replaced with a substitute item that performs a comparable function at the replacement site, payment shall be the lesser of: the cost of the substitute item, including installation costs at the replacement site, minus any proceeds from the sale or trade-in of the replaced item; or the estimated cost of moving and reinstalling the replaced item.

In addition to the moving payments described above, a business may be eligible for a payment up to \$10,000 for the actual reasonable and necessary expenses of re-establishing at the replacement site. Generally, re-establishment expenses include certain repairs and improvements to the replacement site, increased operating costs, exterior signing, advertising the replacement location, and other fees paid to re-establish. Receipted bills and other evidence of these expenses are required for payment. The total maximum re-establishment payment eligibility is \$10,000.

In lieu of all moving payments described above, a business may elect to receive a fixed payment equal to the average annual net earnings of the business. This payment shall not be less than \$1,000 nor more than \$20,000. In order to be entitled to this payment, the State must determine that the business cannot be relocated without a substantial loss of its existing patronage; the business is not part of a commercial enterprise having more than three other establishments in the same or similar business that are not being acquired; and the business contributes materially to the income of a displaced owner during the two taxable years prior to the year of the displacement. A business operated at the displacement site solely for the purpose of renting to others is not eligible. Considerations in the State's determination of loss of existing patronage are the type of business conducted by the displaced business and the nature of the clientele. The relative importance of the present and proposed locations to the displaced business and the availability of suitable replacement sites are also factors.

In order to determine the amount of the "in lieu of" moving expense payment, the average annual net earnings of the business is to be one-half of the net earnings before taxes during the two taxable years immediately preceding the taxable year in which the business is relocated. If the two taxable years are not representative, the State may use another two-year

period that would be more representative. Average annual net earnings include any compensation paid by the business to the owner, owner's spouse, or dependents during the period. Should a business be in operation less than two years, the owner of the business may still be eligible to receive the "in lieu of" payment. In all cases, the owner of the business must provide information to support its net earnings, such as income tax returns, or certified financial statements, for the tax years in question.

Displaced farms and non-profit organizations are also eligible for actual reasonable moving costs up to 50 miles, actual direct losses of tangible personal property, search costs up to \$2,500 and re-establishment expenses up to \$10,000 or a fixed payment "in lieu of" actual moving expenses of \$1,000 to \$20,000. The State may determine that a displaced farm may be paid a minimum of \$1,000 to a maximum of \$20,000 based upon the net income of the farm, provided that the farm has been relocated or the partial acquisition caused a substantial change in the nature of the farm. In some cases, payments "in lieu of" actual moving costs may be made to farm operations that are affected by a partial acquisition. A non-profit organization is eligible to receive a fixed payment or an "in lieu of" actual moving cost payment, in the amount of \$1,000 to \$20,000 based on gross annual revenues less administrative expenses.

A more detailed explanation of the benefits and payments available to displaced persons, businesses, farms and non-profit organizations is available in the brochure entitled, "Relocation Assistance – Your Rights and Benefits," that will be distributed at the public hearing for this project and be given to all displaced persons.

Federal and State laws require that the State Highway Administration shall not proceed with any phase of a project which will cause the relocation of any persons, or proceed with any construction project, until it has furnished satisfactory assurances that the above payments will be provided, and that all displaced persons will be satisfactorily relocated to comparable decent, safe and sanitary housing within their financial means, or that such housing is in place and has been made available to the displaced persons.

In addition, the requirements of Public Law 105-117 provides that a person who is an alien and is not lawfully present in the United States shall not be eligible for relocation payments or other assistance under the Uniform Act. It also directed all State displacing agencies that utilize Federal funds in their projects to implement procedures for compliance with this law in order to safeguard that funding. To this end, displaced persons will be asked to certify to their citizenship or alien status prior to receiving payments or other benefits under the Relocation Assistance Program.

# ***Appendix C:***

## ***Farmland Conversion Coordination***







Rummel,  
Klepper  
& Kahl, LLP

William K. Hellmann  
Emeritus

David W. Wallace  
Robert J. Halbert  
Stephen G. Zentz  
J. Michael Potter  
Thomas E. Mohler  
James A. Zito

Charles M. Easter, Jr.  
Joseph A. Romanowski, Jr.  
Michael L. Krupsaw  
Lars E. Hill  
J. Tommy Peacock, Jr.  
Michael W. Myers  
Martin C. Rodgers  
Kenneth A. Goon  
Richard J. Adams, Jr.  
John A. d'Epagnier  
Barbara J. Hoage  
Christopher F. Wright  
Owen L. Peery  
Nancy R. Bergeron  
Stuart A. Montgomery  
David G. Vanscoy  
Henry J. Bankard, Jr.  
Peter C. D'Adamo  
James F. Ridenour, Jr.  
Robert J. Andryszak  
Raymond M. Harbeson, Jr.  
B. Keith Skinner  
Karen B. Kahl  
Seyed A. Saadat  
John C. Moore  
Sonya Y. Brown  
Eric M. Klein

81 Mosher Street  
Baltimore, Maryland  
21217-4250  
Ph: 410-728-2900  
Fax: 410-728-3160  
www.rkk.com

January 15, 2009

RE: Project No. FR192B11  
I-270/US 15 Multi-Modal Corridor Study  
Frederick and Montgomery Counties, Maryland

Mr. Mark Siebert  
District Conservationist  
Frederick County Service Center  
Natural Resource Conservation Service  
92 Thomas Jefferson Drive, Suite 240  
Frederick, MD 21702-4403

Dear Mr. Siebert,

As part of the process required by the Natural Environmental Policy Act (NEPA) of 1969, the Maryland State Highway Administration (SHA) and the Maryland Transit Administration (MTA) are currently preparing a Draft Alternatives Analysis/Environmental Assessment for the I-270/US 15 Multi-Modal Corridor Study in Frederick and Montgomery Counties, Maryland. The project extends from the Shady Grove Metro in Montgomery County to US 15/Biggs Ford Road in Frederick County (**Attachment A**). The purpose of the I-270/US 15 Multi-Modal Corridor Study is to evaluate options to address congestion, improve mobility and improve safety conditions along the Corridor.

The 2009 Alternatives Analysis/Environmental Assessment (currently in draft form) serves as a supplement to the 2002 Draft Environmental Impact Statement (DEIS) by introducing and evaluating two new highway alternatives (Alternatives 6A/B and 7A/B). These alternatives evaluate the impacts of express toll lanes (ETLs) as a managed lane concept to support the purpose and need for the project. The options for transit, light rail or bus on the Corridor Cities Transitway, remain the same as presented in the 2002 DEIS. On April 24, 2002, a Farmland Conversion Impact Rating (FCIR) Form AD-1006 was forwarded to you by Parsons Brinkerhoff Quade and Douglas for the alternatives evaluated in the DEIS: 3A/B, 4A/B, and 5A/B/C.

As required by the Farmland Protection Policy Act (FPPA) of 1981 (7 USC 4201 as implemented by the FPPA of 1981, Final Rule of July 5, 1994 (7 CFR 658)), the FCIR Form for Corridor Type Projects (NRCS-CPA-106) is being forwarded to you for the ETL alternatives, Alternative 6A/B and 7A/B, evaluated in the current document.



Rummel, Klepper & Kahl, LLP

Mr. Mark Siebert  
I-270/US 15 Multi-Modal Corridor Study  
NRCS-CPA-106  
January 15, 2009  
Page 2

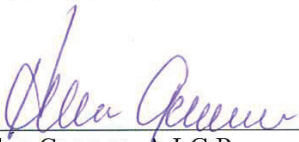
Alternatives 6A/B and 7A/B provide general purpose lanes, auxiliary lanes, ETLs, additional interchanges, improvements to existing interchanges, and one new park and ride lot along the I-270/US 15 Corridor. The two alternatives are designed on an identical physical footprint throughout their length. Alternative 6A/B would provide two ETLs in each direction from I-370 to MD 121, and one ETL in each direction from MD 121 to north of MD 80. Alternative 7A/B would provide two ETLs in each direction from I-370 to north of MD 80. The transit component of Alternatives 6A/B and 7A/B would provide a fixed guideway service on the proposed CCT alignment from the Shady Grove Metrorail Station to the COMSAT area in Montgomery County. Service would be provided by light rail or by bus on the guideway. Twelve new stations are proposed to be located at residential, mixed-use, and employment centers along the route, and an operations and maintenance facility may be included. A multi-use hiker-biker trail is included adjacent to the transitway alignment.

#### Farmland Conversion Impact Rating Form

The Farmland Conversion Impact Rating Form for Corridor Type Projects (NRCS-CPA-106), with Parts I and III completed for Alternatives 6A/B and 7A/B, is enclosed along with mapping information (**Attachment B, Sheets 1-13**) showing the edge of pavement and proposed limit of disturbance for the alternatives' alignment with Prime Farmland Soils and Soils of Statewide Importance superimposed on the aerial mapping. Existing property lines are also shown.

We look forward to receiving your response with the appropriate parts completed by your office for the proposed build alternatives. Should you have any questions or concerns, please feel free to contact Ms. Anne Elrays, SHA Environmental Manager, at 410-545-8562 or via email at [aerays@sha.state.md.us](mailto:aerays@sha.state.md.us), or me at 410-462-9341. We appreciate your cooperation and prompt attention to this matter.

Very truly yours,



Helen German, A.I.C.P.  
Environmental Planner, Transportation Planning  
Rummel, Klepper & Kahl, LLP

Enclosures

cc: Anne Elrays, SHA  
Russ Anderson, SHA  
Rick Kiegel, MTA





U.S. DEPARTMENT OF AGRICULTURE  
Natural Resources Conservation Service

NRCS-CPA-106  
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING  
FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 1/15/09	4. Sheet 1 of 1			
1. Name of Project I-270 Multi-Modal Corridor Study		5. Federal Agency Involved Federal Highway Administration/Federal Transit Administration				
2. Type of Project Transportation Uses/Highway and Tranist		6. County and State Frederick County, Maryland				
PART II (To be completed by NRCS)		1. Date Request Received by NRCS	2. Person Completing Form			
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES <input type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated   Average Farm Size				
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %		7. Amount of Farmland As Defined in FPPA Acres: %			
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System		10. Date Land Evaluation Returned by NRCS			
PART III (To be completed by Federal Agency)		Alternative Corridor For Segment				
		Alt 6A/6B	Alt 7A/7B	Corridor C	Corridor D	
A. Total Acres To Be Converted Directly		339	339			
B. Total Acres To Be Converted Indirectly, Or To Receive Services		0	0			
C. Total Acres In Corridor		339	339	0	0	
PART IV (To be completed by NRCS) Land Evaluation Information						
A. Total Acres Prime And Unique Farmland						
B. Total Acres Statewide And Local Important Farmland						
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted						
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value						
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)						
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points				
1. Area in Nonurban Use		15				
2. Perimeter in Nonurban Use		10				
3. Percent Of Corridor Being Farmed		20				
4. Protection Provided By State And Local Government		20				
5. Size of Present Farm Unit Compared To Average		10				
6. Creation Of Nonfarmable Farmland		25				
7. Availability Of Farm Support Services		5				
8. On-Farm Investments		20				
9. Effects Of Conversion On Farm Support Services		25				
10. Compatibility With Existing Agricultural Use		10				
TOTAL CORRIDOR ASSESSMENT POINTS		160	0	0	0	0
PART VII (To be completed by Federal Agency)						
Relative Value Of Farmland (From Part V)		100				
Total Corridor Assessment (From Part VI above or a local site assessment)		160	0	0	0	0
TOTAL POINTS (Total of above 2 lines)		260	0	0	0	0
1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?  YES <input type="checkbox"/> NO <input type="checkbox"/>			
5. Reason For Selection:						
Signature of Person Completing this Part: _____ DATE _____						
NOTE: Complete a form for each segment with more than one Alternate Corridor						

Clear Form



**Rummel,  
Klepper  
& Kahl, LLP**

*William K. Hellmann  
Emeritus*

*David W. Wallace  
Robert J. Halbert  
Stephen G. Zentz  
J. Michael Potter  
Thomas E. Mohler  
James A. Zito*

*Charles M. Easter, Jr.  
Joseph A. Romanowski, Jr.  
Michael L. Krupsaw  
Lars E. Hill  
J. Tommy Peacock, Jr.  
Michael W. Myers  
Martin C. Rodgers  
Kenneth A. Goon  
Richard J. Adams, Jr.  
John A. d'Epagnier  
Barbara J. Hoage  
Christopher F. Wright  
Owen L. Peery  
Nancy R. Bergeron  
Stuart A. Montgomery  
David G. Vanscoy  
Henry J. Bankard, Jr.  
Peter C. D'Adamo  
James F. Ridenour, Jr.  
Robert J. Andryszak  
Raymond M. Harbeson, Jr.  
B. Keith Skinner  
Karen B. Kahl  
Seyed A. Saadat  
John C. Moore  
Sonya Y. Brown  
Eric M. Klein*

*81 Mosher Street  
Baltimore, Maryland  
21217-4250  
Ph: 410-728-2900  
Fax: 410-728-3160  
www.rkk.com*

January 15, 2009

RE: Project No. FR192B11  
I-270/US 15 Multi-Modal Corridor Study  
Frederick and Montgomery Counties, Maryland

Mr. J.G. Warfield  
District Conservationist  
Montgomery County Service Center  
Natural Resource Conservation Service  
18410 Muncaster Road  
Derwood, MD 20855-1421

Dear Mr. Warfield,

As part of the process required by the Natural Environmental Policy Act (NEPA) of 1969, the Maryland State Highway Administration (SHA) and the Maryland Transit Administration (MTA) are currently preparing a Draft Alternatives Analysis/Environmental Assessment for the I-270/US 15 Multi-Modal Corridor Study in Frederick and Montgomery Counties, Maryland. The project extends from the Shady Grove Metro in Montgomery County to US 15/Biggs Ford Road in Frederick County (**Attachment A**). The purpose of the I-270/US 15 Multi-Modal Corridor Study is to evaluate options to address congestion, improve mobility and improve safety conditions along the Corridor.

The 2009 Alternatives Analysis/Environmental Assessment (currently in draft form) serves as a supplement to the 2002 Draft Environmental Impact Statement (DEIS) by introducing and evaluating two new highway alternatives (Alternatives 6A/B and 7A/B). These alternatives evaluate the impacts of express toll lanes (ETLs) as a managed lane concept to support the purpose and need for the project. The options for transit, light rail or bus on the Corridor Cities Transitway, remain the same as presented in the 2002 DEIS. On April 24, 2002, a Farmland Conversion Impact Rating (FCIR) Form AD-1006 was forwarded to you by Parsons Brinkerhoff Quade and Douglas for the alternatives evaluated in the DEIS: 3A/B, 4A/B, and 5A/B/C.

As required by the Farmland Protection Policy Act (FPPA) of 1981 (7 USC 4201 as implemented by the FPPA of 1981, Final Rule of July 5, 1994 (7 CFR 658)), the FCIR Form for Corridor Type Projects (NRCS-CPA-106) is being forwarded to you for the ETL alternatives, Alternative 6A/B and 7A/B, evaluated in the current document.

Mr. J.G. Warfield  
I-270/US 15 Multi-Modal Corridor Study  
NRCS-CPA-106  
January 15, 2009  
Page 2



**Rummel, Klepper & Kahl, LLP**

Alternatives 6A/B and 7A/B provide general purpose lanes, auxiliary lanes, ETLs, additional interchanges, improvements to existing interchanges, and one new park and ride lot along the I-270/US 15 Corridor. The two alternatives are designed on an identical physical footprint throughout their length. Alternative 6A/B would provide two ETLs in each direction from I-370 to MD 121, and one ETL in each direction from MD 121 to north of MD 80. Alternative 7A/B would provide two ETLs in each direction from I-370 to north of MD 80. The transit component of Alternatives 6A/B and 7A/B would provide a fixed guideway service on the proposed CCT alignment from the Shady Grove Metrorail Station to the COMSAT area in Montgomery County. Service would be provided by light rail or by bus on the guideway. Twelve new stations are proposed to be located at residential, mixed-use, and employment centers along the route, and an operations and maintenance facility may be included. A multi-use hiker-biker trail is included adjacent to the transitway alignment.

#### Farmland Conversion Impact Rating Form

The Farmland Conversion Impact Rating Form for Corridor Type Projects (NRCS-CPA-106), with Parts I and III completed for Alternatives 6A/B and 7A/B, is enclosed along with mapping information (**Attachment B, Sheets 1-13**) showing the edge of pavement and proposed limit of disturbance for the alternatives' alignment with Prime Farmland Soils and Soils of Statewide Importance superimposed on the aerial mapping. Existing property lines are also shown.

We look forward to receiving your response with the appropriate parts completed by your office for the proposed build alternatives. Should you have any questions or concerns, please feel free to contact Ms. Anne Elrays, SHA Environmental Manager, at 410-545-8562 or via email at [aerays@sha.state.md.us](mailto:aerays@sha.state.md.us), or me at 410-462-9341. We appreciate your cooperation and prompt attention to this matter.

Very truly yours,

Helen German, A.I.C.P.  
Environmental Planner, Transportation Planning  
Rummel, Klepper & Kahl, LLP

Enclosures

cc: Anne Elrays, SHA  
Russ Anderson, SHA  
Rick Kiegel, MTA





U.S. DEPARTMENT OF AGRICULTURE  
Natural Resources Conservation Service

NRCS-CPA-106  
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING  
FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request 1/15/09		4. Sheet 1 of 1	
1. Name of Project I-270 Multi-Modal Corridor Study		5. Federal Agency Involved Federal Highway Administration/Federal Transit Administration			
2. Type of Project Transportation Uses/Highway and Tranist		6. County and State Montgomery County, Maryland			
PART II (To be completed by NRCS)		1. Date Request Received by NRCS		2. Person Completing Form	
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form).		YES <input type="checkbox"/> NO <input type="checkbox"/>		4. Acres Irrigated   Average Farm Size	
5. Major Crop(s)		6. Farmable Land in Government Jurisdiction Acres: %		7. Amount of Farmland As Defined in FPPA Acres: %	
8. Name Of Land Evaluation System Used		9. Name of Local Site Assessment System		10. Date Land Evaluation Returned by NRCS	
PART III (To be completed by Federal Agency)		Alternative Corridor For Segment			
		Alt 6A/6B		CAlt 7A/7B	
		Corridor C		Corridor D	
A. Total Acres To Be Converted Directly		609		609	
B. Total Acres To Be Converted Indirectly, Or To Receive Services		8		8	
C. Total Acres In Corridor		617		617	
PART IV (To be completed by NRCS) Land Evaluation Information		0		0	
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value					
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)					
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points			
1. Area in Nonurban Use		15			
2. Perimeter in Nonurban Use		10			
3. Percent Of Corridor Being Farmed		20			
4. Protection Provided By State And Local Government		20			
5. Size of Present Farm Unit Compared To Average		10			
6. Creation Of Nonfarmable Farmland		25			
7. Availablility Of Farm Support Services		5			
8. On-Farm Investments		20			
9. Effects Of Conversion On Farm Support Services		25			
10. Compatibility With Existing Agricultural Use		10			
TOTAL CORRIDOR ASSESSMENT POINTS		160		0	
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100			
Total Corridor Assessment (From Part VI above or a local site assessment)		160		0	
TOTAL POINTS (Total of above 2 lines)		260		0	
1. Corridor Selected:		2. Total Acres of Farmlands to be Converted by Project:		3. Date Of Selection:	
				4. Was A Local Site Assessment Used?  YES <input type="checkbox"/> NO <input type="checkbox"/>	
5. Reason For Selection:					
Signature of Person Completing this Part:   DATE					
NOTE: Complete a form for each segment with more than one Alternate Corridor					

Clear Form



18410  
Muncaster Road  
Derwood, MD 20855  
Phone 301-590-2855

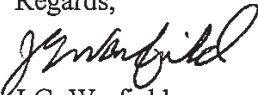
March 31, 2009

Helen German  
Environmental Planner, Transportation Planning  
Rummel, Klepper & Kahl, LLP  
81 Mosher Street  
Baltimore, Maryland 21217-4250

Dear Ms. German,

Enclosed per your request is the completed Form AD-1006. This form provides the Farmland Conversion Impact Rating for the Maryland State Highway Administration (SHA) proposed project for I-270/US 15 Multi-modal Corridor Study for Montgomery County. If additional assistance is needed, I can be reached on 301-590-2855.

Regards,

  
J.G. Warfield  
District Conservationist

U.S. DEPARTMENT OF AGRICULTURE  
Natural Resources Conservation Service

NRCS-CPA-106  
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING  
FOR CORRIDOR TYPE PROJECTS

PART I (To be completed by Federal Agency)		3. Date of Land Evaluation Request	1/15/09	4. Sheet 1 of 1
1. Name of Project		5. Federal Agency Involved		
I-270 Multi-Modal Corridor Study		Federal Highway Administration/Federal Transit Administration		
2. Type of Project		6. County and State		
Transportation Uses/Highway and Tranist		Montgomery County, Maryland		
PART II (To be completed by NRCS)		1. Date Request Received by NRCS	2. Person Completing Form	
		1/22/09	J G WARFIELD	
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form).		YES <input checked="" type="checkbox"/> NO <input type="checkbox"/>	4. Acres Irrigated   Average Farm Size	
			N/A   121	
5. Major Crop(s)		6. Farmable Land in Government Jurisdiction		7. Amount of Farmland As Defined in FPPA
CORN, SOYBEANS, WHEAT, RAY		Acres: 123,232 % 38		Acres: 82,346 % 25
8. Name Of Land Evaluation System Used		9. Name of Local Site Assessment System		10. Date Land Evaluation Returned by NRCS
MONTGOMERY COUNTY LAND EVALUATION ANALYSIS		NONE		3/31/09
PART III (To be completed by Federal Agency)		Alternative Corridor For Segment		
		Alt 6A/6B	CAIT 7A/7B	Corridor C
A. Total Acres To Be Converted Directly		609	609	
B. Total Acres To Be Converted Indirectly, Or To Receive Services		8	8	
C. Total Acres In Corridor		617	617	0
PART IV (To be completed by NRCS) Land Evaluation Information				
A. Total Acres Prime And Unique Farmland		390.3	390.3	
B. Total Acres Statewide And Local Important Farmland		218.4	218.4	
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.5	0.5	
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		27	27	
PART V (To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)		89	89	
PART VI (To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))		Maximum Points		
1. Area in Nonurban Use		15		
2. Perimeter in Nonurban Use		10		
3. Percent Of Corridor Being Farmed		20		
4. Protection Provided By State And Local Government		20		
5. Size of Present Farm Unit Compared To Average		10		
6. Creation Of Nonfarmable Farmland		25		
7. Availability Of Farm Support Services		5		
8. On-Farm Investments		20		
9. Effects Of Conversion On Farm Support Services		25		
10. Compatibility With Existing Agricultural Use		10		
TOTAL CORRIDOR ASSESSMENT POINTS		160	0	0
PART VII (To be completed by Federal Agency)				
Relative Value Of Farmland (From Part V)		100		
Total Corridor Assessment (From Part VI above or a local site assessment)		160	0	0
TOTAL POINTS (Total of above 2 lines)		260	0	0
1. Corridor Selected:		2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used?
				YES <input type="checkbox"/> NO <input type="checkbox"/>
5. Reason For Selection:				
Signature of Person Completing this Part:				DATE
NOTE: Complete a form for each segment with more than one Alternate Corridor				





***Appendix D:***  
***List of Correspondence***







# 1. Agency Correspondence

## Agency Correspondence

DATE	FROM	TO	SUBJECT
2/13/06	DNR	SHA	Finfish species in the project vicinity.
5/8/06	DNR	SHA	Environmental Review of project.
9/19/06	USFWS	SHA	Endangered and threatened species in project area.
10/2/06	USFWS	SHA	Coordination on federally listed or proposed to be listed endangered or threatened species in the project area.
1/22/07	Frederick County Fire & Rescue	SHA	Project impacts on fire and rescue services.
5/21/07	SHA	M-NCPPC	Coordination on the Park Potomac development.
6/13/02	Frederick County Dept. of Planning & Zoning	SHA	Historic preservation concerns with the project in Frederick County.
4/26/04	SHA	MHT	Determination of Eligibility for Bridge Numbers 10078, 10079, and 10080 Finding that no historic properties will be affected by project number FR382B21.
5/27/04	MHT	SHA	Concur with April 26, 2004 determinations that bridges are ineligible.
2/12/07	SHA	MHT	Determinations of Eligibility for historic structures (AEC and 2 wetland mitigation sites) in the project area (with attachments 1, 2, and 4).
4/13/07	MHT	SHA	Do Not Concur with February 12, 2007 determinations of eligibility. Concur with AEC (eligible) and 8374 Woodville Road (not eligible). Do not concur with 8435 Woodville Road (eligible)).
3/12/07	Frederic County Historic Preservation Commission	SHA	Coordination on historic resources in the vicinity of Wetland Mitigation Areas 19 and 20.
1/10/08	SHA	MHT	Determination of adverse effect letter (with attachments 2, 3, 4 and 5)
4/4/2008	SHA	MHT	Determinations of eligibility of CSX bridges and discussion of Seneca Creek State Park (without attachments)
6/26/08	MHT	SHA	Concurs that the project will have an adverse effect on historic resources. Concurs with SHA's revised boundary for Belward Farm to 107 acres. Lists resources within the project APE.
6/2/08	SHA	FHWA	Asking them to notify ACHP of adverse effect of project (without attachments).
1/17/08	SHA	NPS (Ms. Rust)	Determination of adverse effect to Monocacy National Battlefield (with attachments 4 and 5)
1/17/08	SHA	NPS (Ms. Trail)	Determination of adverse effect to Monocacy National Battlefield (with attachment 3)
3/18/08	SHA	USDI NPS National Capital Region	Apprising the USDI National Capital Region of adverse effects on Monocacy National Battlefield
4/18/08	USDI National Park Service	SHA	Response to finding of adverse effect on Battlefield; suggestions for possible mitigation of effects. Asks SHA to include additional consulting parties.

DATE	FROM	TO	SUBJECT
3/18/08	SHA	National Park Service – National Capital Region	Forwarding letters sent to MD SHPO, MNB and NHL Philadelphia Region that identify impacts to Monocacy National Battlefield and requesting comments (without attachments)
2/1/08	Frederick County Landmarks Foundation	SHA	Expressing concerns about the impacts to Schifferstadt
2/25/08	SHA	Frederick County Landmarks Foundation	Response to concerns over impacts on Schifferstadt.
2/7/08	Frederick County Historic Preservation Commission	SHA	Concurrence with adverse effect determinations; agree to join as consulting party.
2/8/08	City of Frederick Historic Preservation Commission	SHA	Historic preservation concerns with the project in the City of Frederick.
2/19/08	Frederick County Parks & Rec.	SHA	Concerns with historic preservation and park impacts to Rose Hill Manor and Historical Park.
4/17/08	GSA	SHA	Agree to join as consulting party for AEC adverse effect
6/20/08	SHA	Mr. May - Crown Village Farm LLC	Requesting consultation regarding adverse effect to England/Crown Farm (without attachments).
7/22/08	Crown Village Farm, LLC	SHA	Accepting the invitation to be a consulting party.
6/20/08	SHA	Mr. & Mrs. Thatcher – Birely-Roelkey Farm	Requesting consultation regarding adverse effect to Birely-Roelkey Farmstead (without attachments).
6/20/08	SHA	Mr. McDonough & Mr. Justus – JHU Belward Farm	Requesting consultation regarding adverse effect to Belward Farm (without attachments).
6/20/08	SHA	Spring Bank LLC	Requesting consultation regarding adverse effect to Spring Bank (without attachments).
7/25/08	Dan Ryan Builders (Spring Bank)	SHA	Regarding increased noise levels; expressing preference for a landscaped berm rather than a noise wall to lower noise impacts.
6/23/08	SHA	Frederick County Landmarks Foundation	Requesting consultation regarding adverse effect to Schifferstadt
7/11/08	FHWA	NPS (Ms. Rust)	Informing the National Historic Landmark Philadelphia Region that the project will adversely affect Monocacy National Battlefield and summarizing the consultation to date (without attachments).
7/11/08	FHWA	ACHP	Notifying the ACHP that the project will have an adverse effect on historic properties, and noting the consultation that has taken place to date (without attachments).
7/29/08	ACHP	FHWA	ACHP will participate in the consultation to develop an MOA.
9/22/08	Civil War Preservation Trust	SHA	Accepting the invitation to be a consulting party.





2. Environmental Justice Coordination

Community Coordination

DATE	FROM	TO	SUBJECT
12/13/06	SHA	Public	Requesting assistance in identifying outreach efforts to low-income and minority populations
12/13/06	SHA	Public	Requesting assistance in disseminating information about the project and informing your community

3. Correspondence with Elected Officials

Correspondence with Elected Officials

DATE	FROM	TO	SUBJECT
8/1/02	MD Senate – Senator Roesser	MTA	CCT service to Frederick.
9/3/02	SHA	Montgomery County Council	Response to Councilmember Dacek’s transit comments.
9/5/02	MTA	MD Senate – Senator Roesser	Response regarding CCT service to Frederick.
9/24/02	MTA	Montgomery County Council	Response to Councilmember Dacek’s transit comments.
12/10/02	SHA	Frederick County Board of Commissioners	Response to Commissioner Grey’s comments on the project.
12/17/02	SHA	City of Frederick Mayor Dougherty	Response to City of Frederick’s Resolution and Staff Report on the project based on the DEIS.
9/25/03	MTA	MD House of Delegates - Representative Cryor	Response to comments on Middlebrook Station and the potential for an on-site DOE station.
10/22/04	SHA	MD Senate - Senator Forehand	Response to proposal for redesigning Gude Drive in Rockville as MD 28.
7/12/07	SHA	City of Frederick - Alderman Smith	Response to proposal for construction of an exit ramp from southbound US 15 to westbound Opossumtown Pike.

4. Selected Agency Correspondence from the 2002 Draft Environmental Impact Statement

Select Agency Correspondence from 2002 DEIS

DATE	FROM	TO	SUBJECT
10/8/96	USACE	FHWA	Responding affirmatively to invitation to be a cooperating agency.
6/17/97	EPA	FHWA	Responding affirmatively to invitation to be a cooperating agency.
6/17/97	SHA	M-NCPPC	Detailing the retention of Combination Alternates A and B for further study.
7/22/96	City of Gaithersburg	MDOT	Regarding parks within the City of Gaithersburg and their significance and funding; also talked about “Metropolitan Grove Road Park” and its significance as a part of planned development (TOD).
4/18/96	Fred Co DPW	SHA	Regarding the significance and usage of Rose Hill Manor Park and Urbana Community Park.
2/21/02	SHA	SHA	Notes from the Project Team meeting with DNR on 7/17/01 to review potential impacts to Seneca Creek State Park and North Germantown Greenway and current schedule to completion of the DEIS.
2/21/02	SHA	SHA	Notes from the Project Team meeting with M-NCPPC on 9/5/01 to review potential impacts to Black Hill Regional Park and current schedule for the DEIS.
3/22/02	MDNR	SHA	Regarding the significance and uses of Urbana Lake Fish Management Area and Seneca Creek State Park.
4/8/02	M-NCPPC	MDOT	Comments about project impacts on Middlebrook Hill NCA, Black Hill Regional Park, North Germantown Greenway and Little Bennett Regional Park; suggestions for potential mitigation efforts.
11/6/96	NPS	SHA	Providing MNB information.
3/17/98	SHA	NPS	Responding to the NPS email of 10/29/98.
10/29/98	NPS	SHA	Comments on related 106 process review.
1/27/99	NPS	SHA	Comments on interagency scoping presentation.
2/12/99	SHA	NPS	Responding to NPS comments.
3/25/02	NPS	SHA	Commenting on the preliminary DEIS (not in DEIS).
4/17/02	SHA	NPS	Responding to NPS 3/25/02 letter.

# ***Appendix E:*** ***References***





## References

- Acoustical Society of America (ASA). “Guide to the Evaluation of Human Exposure to Vibration in Buildings.” *American National Standard ANSI S3.29*. ANSI: 1983.
- Acoustical Society of America (ASA). “Part 4, Noise Assessment and Prediction of Long-Term Community Response.” *American National Standard Quantities and Procedures for Description and Measurement of Environmental Sound ANSI S12.9-2005/Part 4*. ANSI: 2005.
- American Public Transit Association (APTA). “Section 2-7, Noise and Vibration,” *1981 Guidelines for Design of Rail Transit Facilities*. January 1979.
- Barrett, M.E., and Malina, J.R. *Comparison of Filtration Systems and Vegetated Controls for Stormwater Treatment*. Third International Conference on Diffuse Pollution, 1998, Scottish Environment Protection Agency. Edinburgh: 1998.
- Barry, T.M. and J.A. Reagan. U.S. Department of Transportation. *Report No. FHWA-RD-77-108: FHWA Highway Traffic Noise Prediction Model*. Washington: GPO, 1978.
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# ***Appendix F:*** ***Contributors***







# Contributors

The Maryland Transit Administration (MTA), Maryland State Highway Administration (SHA), Maryland Toll Authority (MdTA), Federal Transit Administration (FTA), and Federal Highway Administration (FHWA) have prepared the I-270 Multi-Modal Corridor Study AA/EA with the assistance of a team of consultants. The following personnel participated in completing this document.

FEDERAL TRANSIT ADMINISTRATION	
Name	Role
Julie Ann Atkins	Environmental Protection Specialist
Alex Eckmann	Community Planner
Nancy Green	Regional Counsel, Region III
Gail McFadden-Roberts	Community Planner, Region III
Letitia A. Thompson	Administrator, Region III
FEDERAL HIGHWAY ADMINISTRATION	
Name	Role
Nelson Castellanos	Division Administrator-MD
Daniel Johnson	Environmental Program Leader-MD
Denise King	Environmental Specialist-MD
Stephanie Pratt	Area Engineer-MD

MARYLAND STATE HIGHWAY ADMINISTRATION	
Name	Role
Sharon Alderton	Socio-Economics
Russell Anderson	Project Manager
Anne Bruder	Architectural Historian
Anne Elrays	Environmental Manager
Richard Ervin	Archeologist
Sarah Fowler	Project Engineer
Mulowa Kajoba	Project Engineer
Subrat Mahapatra	Travel Forecasting
Brett Ripkin	Project Engineer
MARYLAND TRANSIT ADMINISTRATION	
Name	Role
Ernest Baisden	Manager, Project Development
Theresa Christian	Project Environmental Manager
Rick Kiegel	Project Manager (Transit)
Diane Melia	Environmental Planner
John Newton	Manager, Environmental Planning
Diane Ratcliff	Director, Office of Planning and Capital Programming
Angela Willis	Socio-Economics
MARYLAND TRANSPORTATION AUTHORITY	
Name	Role
Russell Walto	Project Manager





CONSULTANT TEAM				
Firm / Staff	Title	Degree	Professional Certification/ Licenses	AA/EA Contribution
PB Americas, Inc.				
Ron Bruno	Transportation Planner	BA		Socio-Economics, Transportation Planning, GIS Mapping
Kathleen Colbert-Gibson	Supervising Planner	BS/MER	AICP	Section 4(f) Evaluation
Romy de la Cruz	Transit/Highway Engineer	BSCE		Engineering
Chris Dorney	Transportation Planner	BS/MS		Economic Impacts, Document Compilation
Stephanie Foell	Supervising Architectural Historian	BA/MA		Cultural Resources
Michael Flood	Senior Supervising Planner	BA/MUEP	AICP	Transportation Planning
Robert Harbuck	Senior Estimator	BS Certificate in Finance	PE, AACE, CCE	Costing
Alice Lovegrove	Senior Environmental Engineer	BE/MS		Air Quality and Energy
Arthur Morrone	Senior Environmental Scientist, Noise and Acoustics	BS/MS		Noise and Vibration
Tracey Nixon	Lead Planner	BA/MUP	AICP	Purpose and Need, Cost-Benefit Analysis
Allyson Reynolds	Lead Planner	BA/MS		Socio-Economic Impacts, Environmental Justice
Tracee Strum-Gilliam	Supervising Environmental Engineer	BSCE	AICP	Socio-Economic Impacts, Environmental Justice, Project Management
Jennifer Weeks	Senior Transportation Planner	BA/MPA		Transportation Planning, Project Management
Dudley Whitney	Supervising Planner	BS/MCRP	AICP	Transportation Planning
Fitzgerald & Halliday, Inc.				
Kristen Ahlfeld	Principal Planner	BA/MCP	AICP	Socio-Economics, Land Use

CONSULTANT TEAM				
Firm / Staff	Title	Degree	Professional Certification/ Licenses	AA/EA Contribution
Rummel, Klepper & Kahl				
Eric Almquist	Project Manager	BA, BS, MS	AICP, PWS	Natural Resources Technical Report
Raj Basavaraju	Transportation Engineer	BSCE	PE	Traffic Engineering and Analysis
Jim Burnett	Associate	BA, BSCE, MEng	PE, PTOE	Traffic Engineering and Analysis
Tony Chan	Transportation Engineer	BSCE	EIT	Traffic Engineering and Analysis
Anthony Czuchnicki	Transportation Engineer	BSCE		Engineering Design and Impact Assessment
Kendall Drummond	Transportation Engineer	BSCE, MSCE	PE	Engineering Design and Impact Assessment
Denny Finnerin	Project Engineer	BSCE	PE	Engineering Design
Helen German	Environmental Planner	BA/MA	AICP	Document Management, Section 4(f) Evaluation
Amy Giacheri	Transportation Engineer	BSCE	EIT	Engineering Design and Impact Assessment
Brian Horn	Project Manager	BSCE	PE, PTOE	Project Management
Karen Kahl	Associate	BSCE, MSCE	PE, PTOE	Express Toll Lanes; Engineering
Jeff Roberta	Transportation Engineer	BSCE	PE	Engineering Design
Michael Baker Corporation				
Feng Liu	Project Manager	PhD		Travel Forecasting
William W. Thomas, III	Manager, Transportation Planning	BS		Travel Forecasting
Coastal Resources Inc.				
David Smith	Senior Environmental Scientist	BS/MS		Ecological Resources
Bridgette Garner	Environmental Scientist			Ecological Resources
Remline Corp				
Linda Moreland	Vice President	BS		AA/EA Text and Editing
Carrie Titter	Graphic Designer	BFA		AA/EA Graphics/Layout